SKAPANDI SAMFÉLAG

Machine cutting recipes - Handbook

Ens-Ens

INTRODUCTION

Creativity can make dreams come true, and this book is meant to bring about creativity by helping you actively pursue your ideas with the help of technology. All over the world, there are Fab Labs that have precisely this role, helping people realize their ideas with technology. Without people and their ideas, a Fab Lab is an inactive lab, people are needed to achieve the technological opportunities that a Fab Lab offers. Technology is developed by people and should work for people, but some basic digital skills are needed in order to use a Fab Lab. This book helps you take these first steps.

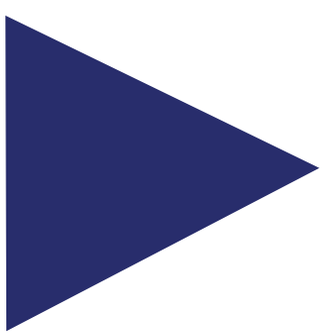
This book is published in connection with the project Skapandi námssamfélag, which translates to Creative learning community. The main goal of the project is to strengthen the creativity of the city's primary school students. The schools in the project have built small creative spaces within each school to facilitate learning. This "recipe book" is designed for schools that are building digital workshops that want their students to engage with digital technologies from the start. Learners of all ages can use this book to take their first steps in using digital technology.

Most people should be able to use this book to make documents suitable for vinyl and laser cutting with the vector software Inkscape. Inkscape is an easy to use, open-source program and provides a good start for further learning in digital technology and prototyping ideas.

Þóra Óskarsdóttir

This book was published with a grant from the city of Reykjavík educational development fund. The fund is appropriately named Make dreams come true (is. Látum draumana rætast)
The fund enabled Fab Lab Reykjavík to develop a variety of teaching materials that support students in prototypeing their creative ideas.

Learn to make files for vinylcutters and lasercutters with this handbook



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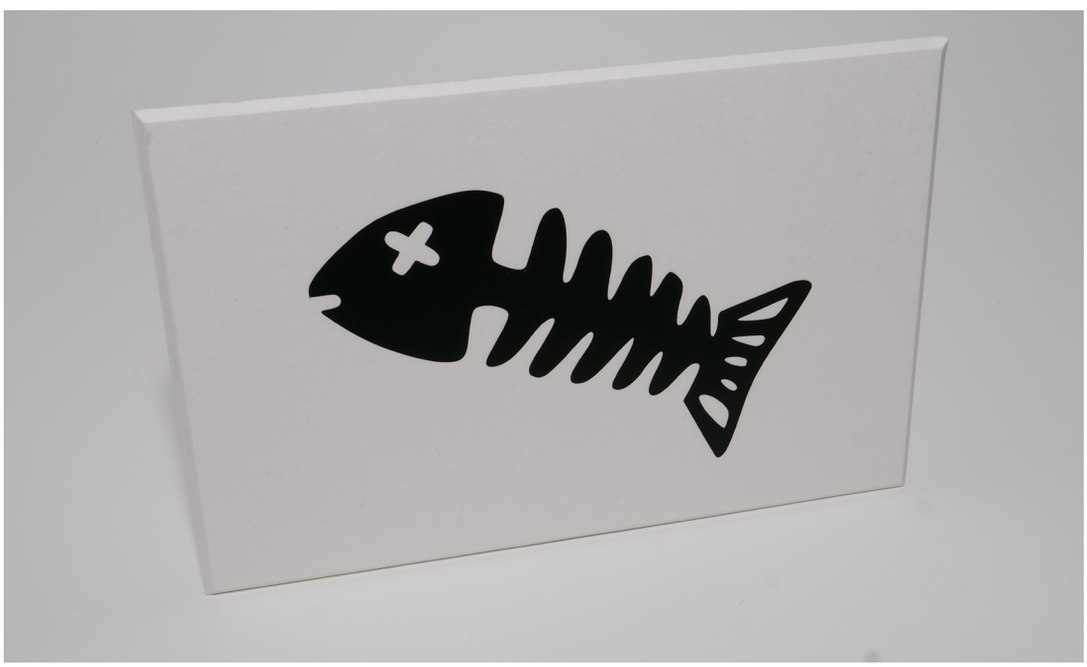
Vinylcutter

1.1 STICKER

AN IMAGE FROM THE INTERNET, CUT INTO WALL VINYL TO MAKE A STICKER



WHAT YOU NEED:

+ INKSCAPE
+ VINYLCUTTER
+ WALL VINYL
+ PLUCKING TOOL
+ TRANSFER TAPE

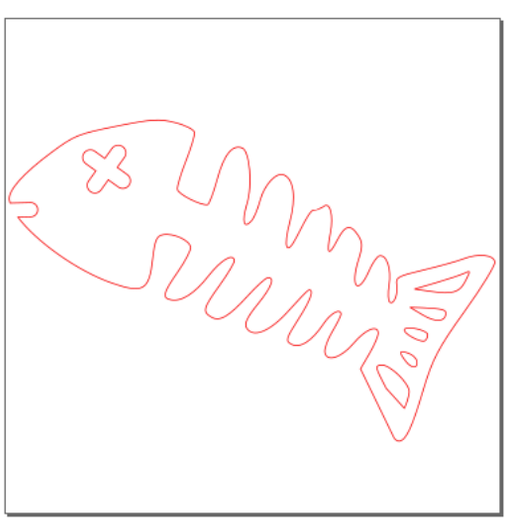


IMAGE OF THE DRAWING IN INKSCAPE

LÁTUM DRAUMANA RÆTAST

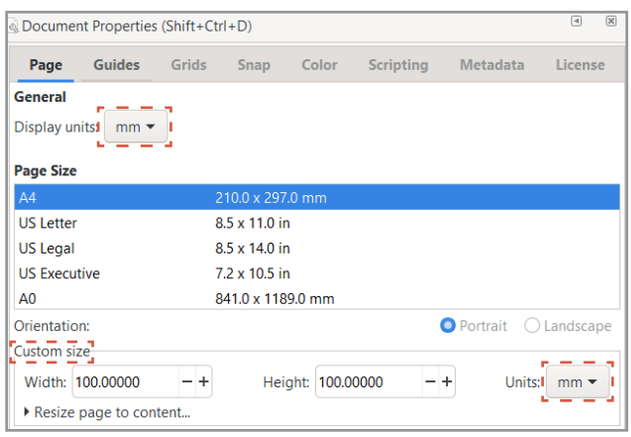
OPEN INKSCAPE

MOVING INSIDE INKSCAPE

1. Zooming.
   - Holding down Ctrl and scrolling up or down will zoom in on your mouse cursor.
2. Moving in Inkscape.
   - Press down on the scroll wheel and move your mouse around.

ADJUSTING THE WORKSPACE

1. Go into **File** and select Document Properties.
2. Set the Units to mm.
3. Adjust width to 100 mm and height to 100 mm in Custom Size.
4. Now the square on your screen has changed size, you have adjusted your workspace.



SELECTING AN IMAGE

1. Open Google.
2. Search for a Black and White image. Another useful search is “Silhouette”.

FIND A REUSABLE IMAGE

1. Select Images.
2. Go under Tools.
3. Click Usage rights and select Creativite commons licenses.
4. Save the image. Right click an image you like and select Save image as and save it.

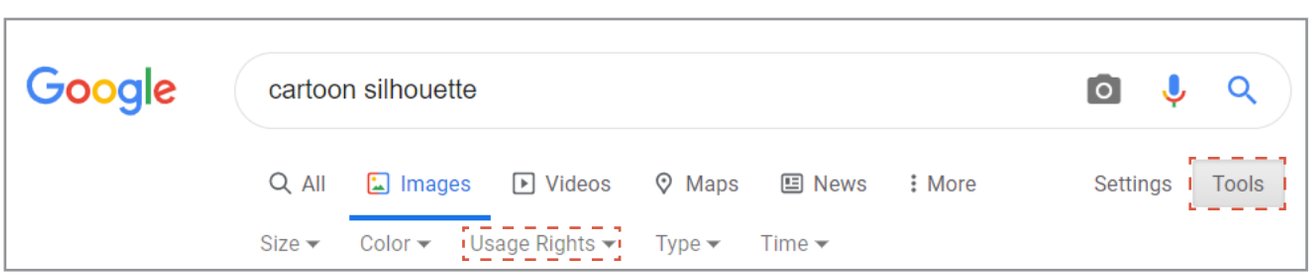
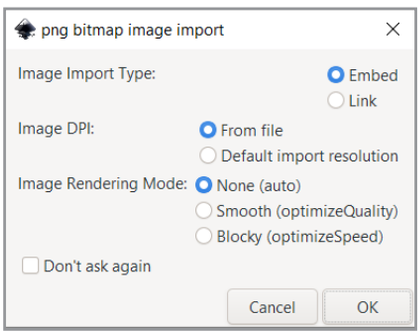
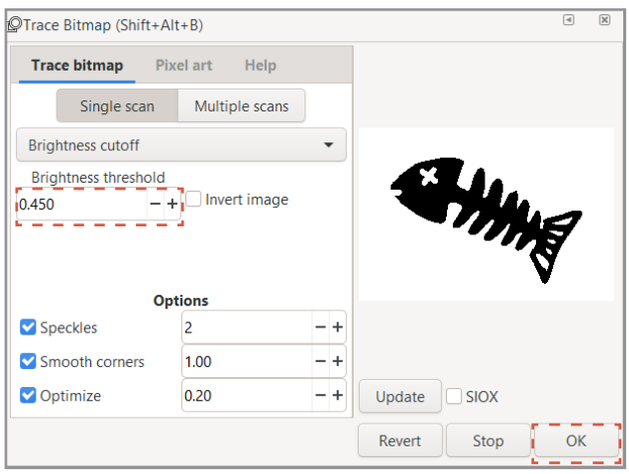


IMAGE OPENED IN INKSCAPE



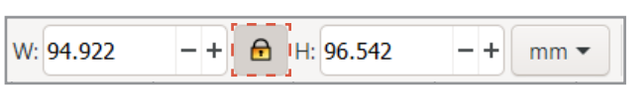
1. Open Inkscape.
2. Select **File** and press Import.
3. Select the image and press Open.
4. Press OK in the Image Import window.

TURNING AN IMAGE INTO A VECTOR

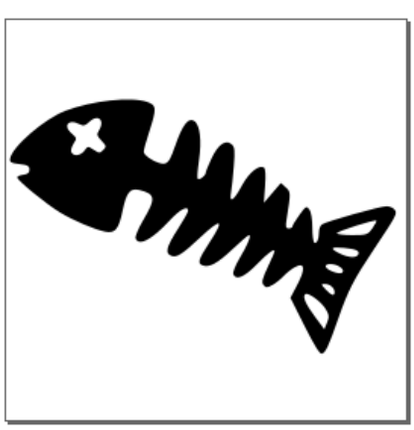


1. Select the image by clicking on it.
   - Then you will see in the bottom left it says Image.
2. Select **Path** and press Trace bitmap.
3. Press OK and take a look at the copy.
   - The bottom left should now say Path.
4. If the copy is unclear adjust the setting Brightness cutoff in the Trace Bitmap window.
   - Copy too dark: Lower the Threshold Value.
   - Copy too bright: Raise the Threshold Value.
5. Delete the original image.
   To check you're deleting the right one, pay attention to the bottom left and whether it says Image.

WORKING WITH SHAPES



1. When a shape is selected two things happen.
   - A square appears around the shape.
   - Information about the shape's size appear in the toolbar up top.
2. You can pull the arrows to change the shapes size.
3. Lock the proportions by pressing the lock in the toolbar up top.
4. Shrink or enlarge the image so it fits into the page.



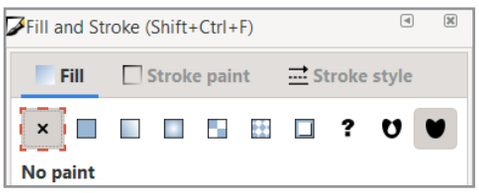
LÁTUM DRAUMANA RÆTAST

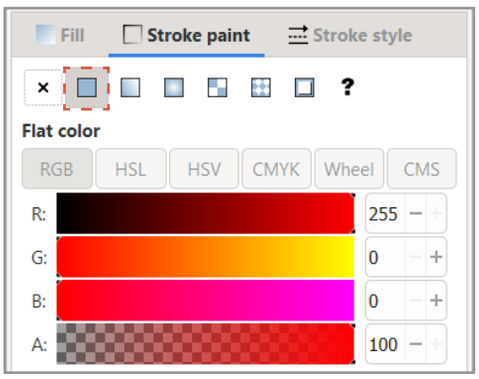
LÁTUM DRAUMANA RÆTAST

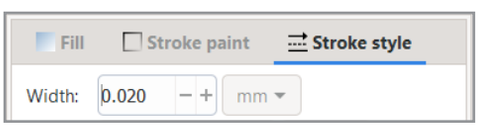
MAKING A CUTTING LINE

Cutting lines must be RED and 0.020 mm thick.

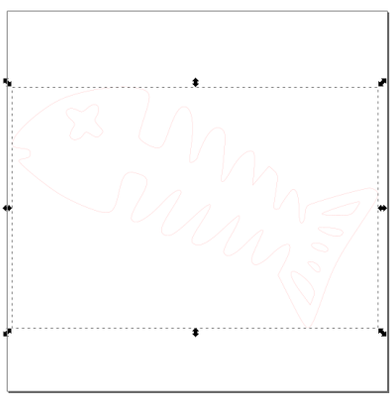
1. Select the image.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.





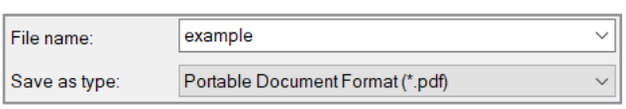


It might look like the image disappeared but if you zoom in you will see the lines are just very thin.

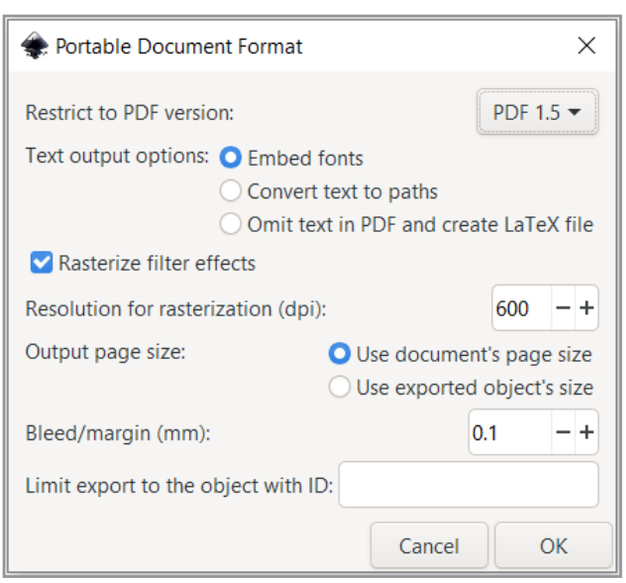


SAVING YOUR PROJECT

If you're in Fablab Reykjavík you can save the project in a folder called "Vinylcutter" Otherwise it's best to save it on a USB flash drive.



1. Go into **File** and select Save as.
2. Select the location you want to save to.
3. Give your project a name in File name.
4. Set Save as type as .pdf
5. Press Save.
6. The Portable Document Format Window will pop up and you set it like so:
7. Press OK.



YOUR PROJECT IS NOW READY FOR THE VINYLCUTTER

1.2 TEXTILE

A VINYL CUTOUT PRESSED INTO FABRIC

WHAT YOU NEED:

+ INKSCAPE
+ VINYL CUTTER
+ TEXTILE VINYL
+ PLUCKING TOOL
+ HEAT PRESS
+ FABRIC/GARMENT

IMAGE OF THE DRAWING IN INKSCAPE

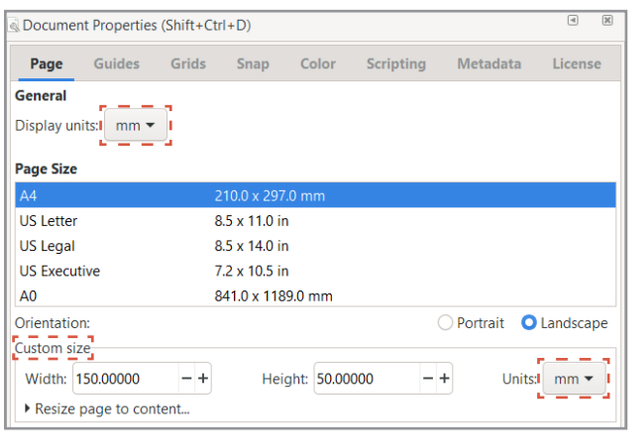
LÁTUM DRAUMANA RÆTAST

OPEN INKSCAPE

MOVING INSIDE INKSCAPE

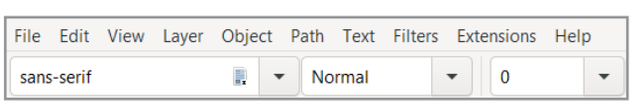
1. Zooming.
   - Holding down Ctrl and scrolling up or down will zoom in on your mouse cursor.
2. Moving in Inkscape.
   - Press down on the scroll wheel and move your mouse around.

ADJUSTING THE WORKSPACE



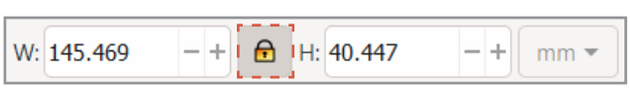
1. Go into **File** and select Document Properties.
2. Set the Units to mm.
3. Adjust width to 150 mm and height to 50 mm in Custom Size.
4. Now the square on your screen has changed size, you have adjusted your workspace.

ADDING TEXT



1. Select the A symbol on the left toolbar.
2. Click on the screen and type some text.
3. Play around with different fonts using Font.
4. Select a font you like.

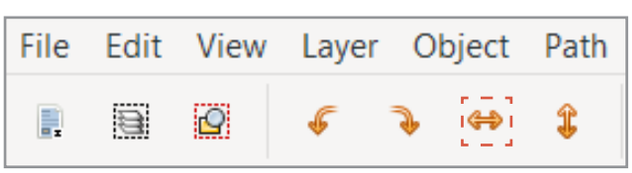
ADJUSTING SIZE



1. Lock the proportions by pressing the lock symbol in the top toolbar, This prevents the shape from distorting.
2. Select the mouse to change the size of the text. Adjust it to fit into the page.

MIRRORING TEXT

Textile vinyl always needs to be mirrored because it's reversed when pressed onto the fabric.



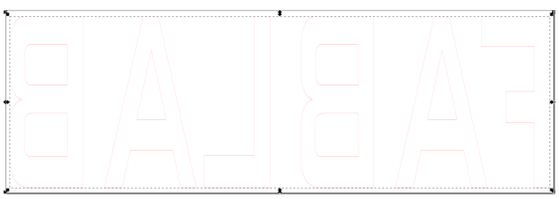
1. Select the text.
2. Press flip selected objects horizontally (See Image).
3. Move the text back into the page if it has moved around.

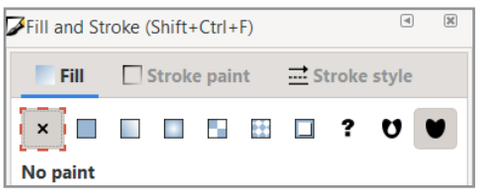
MAKING A CUTTING LINE

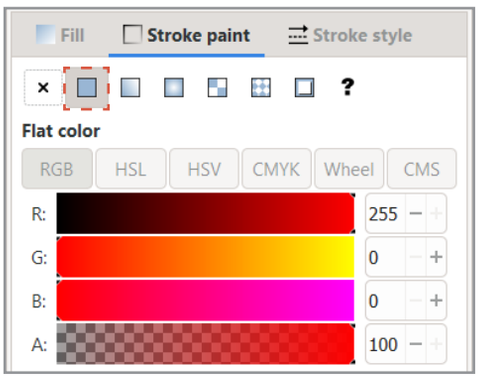
Cutting lines must be RED and 0.020 mm thick.

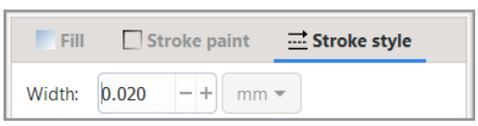
1. Select the image.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.

It might look like the text disappeared but if you zoom in you will see the lines are just very thin.









SAVING YOUR PROJECT

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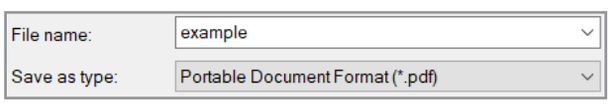
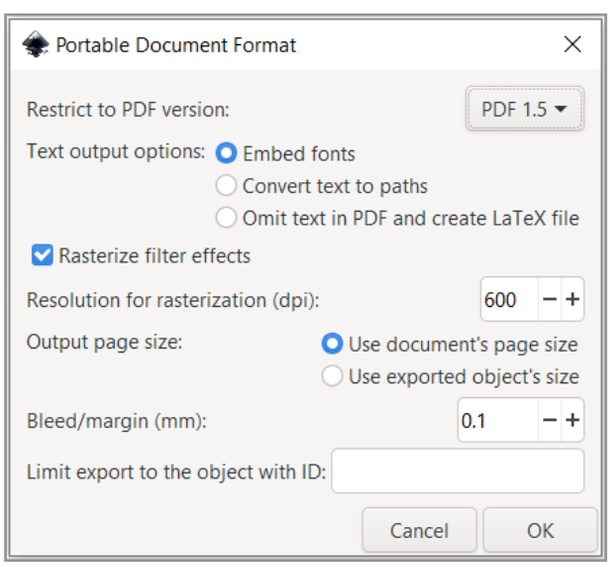
2. Select the location you want to save to.
3. Give your project a name in File name.
4. Set Save as type as .pdf
5. Press Save.
6. The Portable Document Format Window will pop up and you set it like so:
7. Press OK.





LÁTUM DRAUMANA RÆTAST

1.3 STENCIL

AN IMAGE AND TEXT WITH A SQUARE SURROUNDING BOTH CUT INTO VINYL TO MAKE A STENCIL

WHAT YOU NEED:

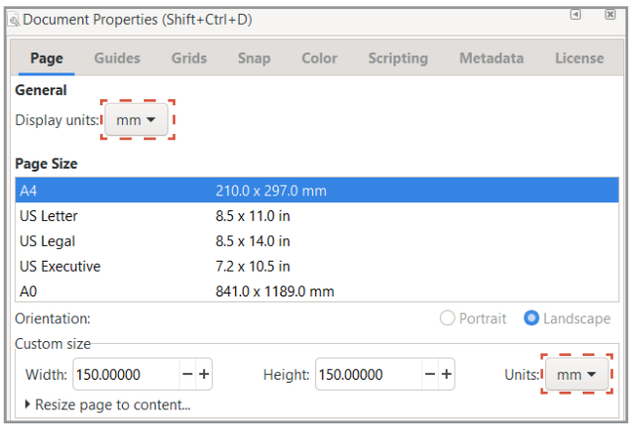
+ INKSCAPE
+ VINYLCUTTER
+ WALL VINYL
+ PLUCKING TOOL
+ TRANSFER TAPE

IMAGE OF THE DRAWING IN INKSCAPE

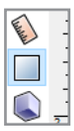
OPEN INKSCAPE

ADJUSTING THE WORKSPACE

1. Go into **File** and select Document Properties.
2. Set the Units to mm.
3. Adjust width and height to 150.



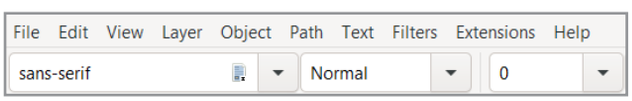
CREATING A SQUARE



1. Select the square icon on the left toolbar.
2. Click and drag to draw the square.
3. Set the width and height to 145 mm.
4. Move the box inside the workspace.
5. Color the square by selecting it and clicking on yellow on the color toolbar at the bottom of your screen.

ADDING TEXT

1. Select the A symbol on the left toolbar.
2. Click on the screen and type some text.
3. Play around with different fonts using Font.



ROTATING TEXT

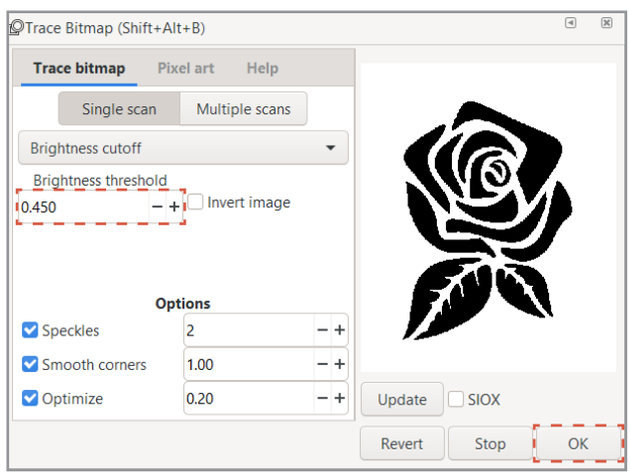
1. Click on the text while it is selected. The corner arrows change from size to rotation.
2. Use the arrows to rotate the text how you want.
3. Move the text into the box, make sure to have enough space for the image below and the text not too close to the edge.

INSERTING AN IMAGE

1. Find an image on Google.
2. Search for a Black and White image. Another useful search is “Silhouette”.
3. Remember to find a reusable image. (See 1.1 Sticer)
4. Copy the image and paste it into Inkscape. Try and find a high quality image.

TURNING AN IMAGE INTO A VECTOR

1. Select the image.
2. Select **Path** and press Trace bitmap.
3. Press OK and take a look at the copy.
4. If the copy is unclear adjust the settings.
5. Delete the original image.
6. To keep the original image’s proportions you can lock the shape by pressing the lock icon in the toolbar.
7. Adjust the image size so it fits below the text insidethe box. Make sure it’s not too close to the edge.



COMBINING

1. Select the image and the text.
2. Go into **Path** og press Union.

CUTTING OUT

1. Select the box, text and the image.
2. Go into **Path** og press Difference.

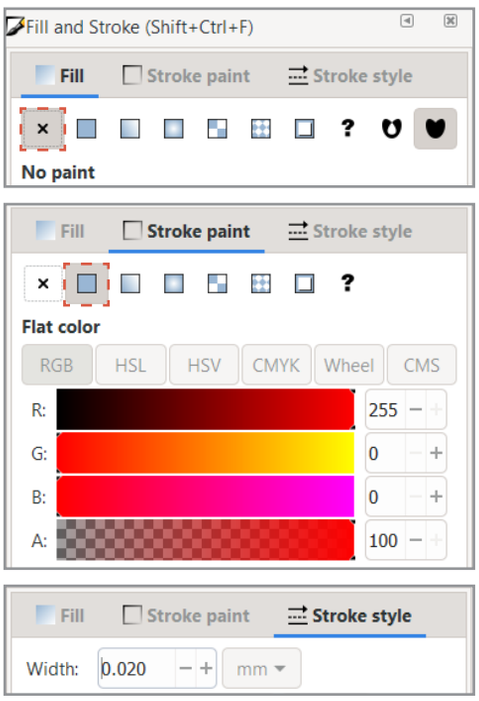
The text and the image are now holes in the box.

LÁTUM DRAUMANA RÆTAST

MAKING A CUTTING LINE

Cutting lines must be RED and 0.020 mm thick.

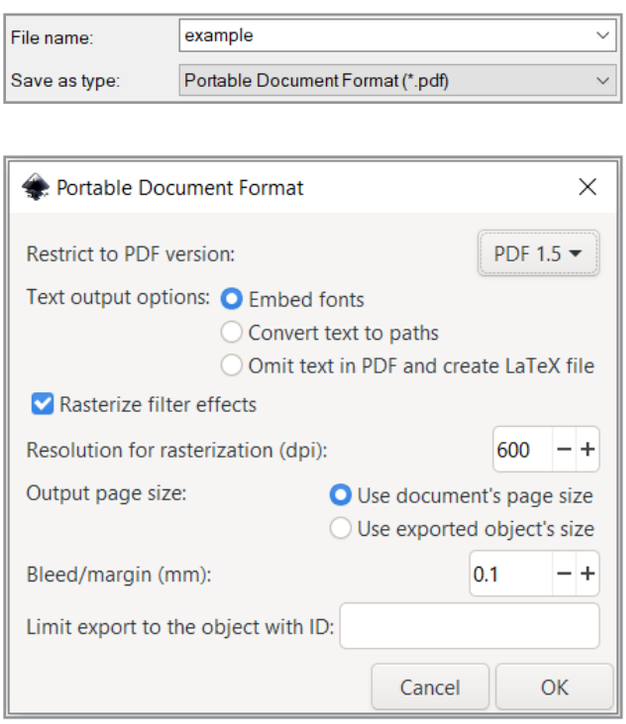
1. Select the image.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.



It might look like the image disappeared but if you zoom in you will see the lines are just very thin.

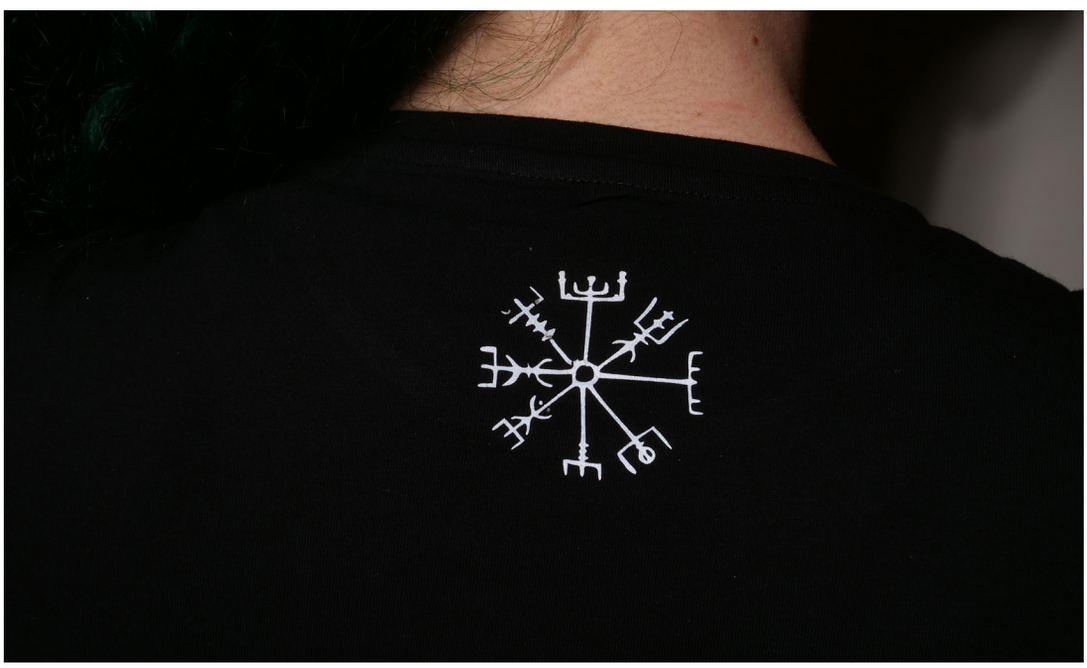
SAVING YOUR PROJECT

1. Go into **File** and select Save as.
2. Give your project a name.
3. Set Save as type as .pdf
4. Press Save.
5. The Portable Document Format Window will pop up and you set it like so:
6. Press OK.



1.4 REFLECTIVE

IMAGE CUT OUT OF REFLECTIVE VINYL AND PRESSED ONTO CLOTHING OR OTHER FABRIC SUITABLE FOR IRONING



WHAT YOU NEED:

+ INKSCAPE
+ VINYL CUTTER
+ REFLECTIVE VINYL
+ PLUCKING TOOL
+ HEAT PRESS
+ FABRIC/GARMENT

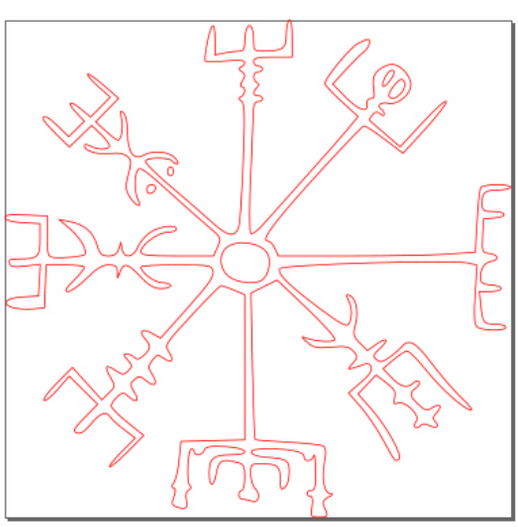
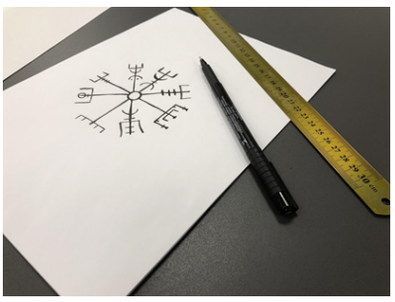


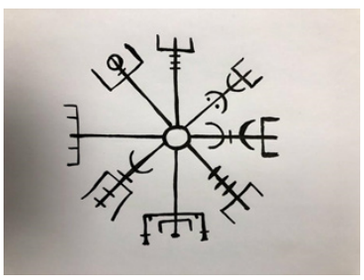
IMAGE OF THE DRAWING IN INKSCAPE

DRAW A PICTURE



1. Take a piece of white paper and a thick black marker pen.
2. For best results, Draw your picture with clear dark lines.

IMAGE OPENED ON COMPUTER



1. Take a photo of your image or scan it.
   - Try and keep the background completely white.
2. Load the image on your computer. You can send it to yourself through e-mail and open it on the computer.
3. You may need to remove the background using image editing software. You can use the Photos program in Windows.

REMOVING A BACKGROUND USING PHOTOS

You can crop around the photo using Photos or Paint.

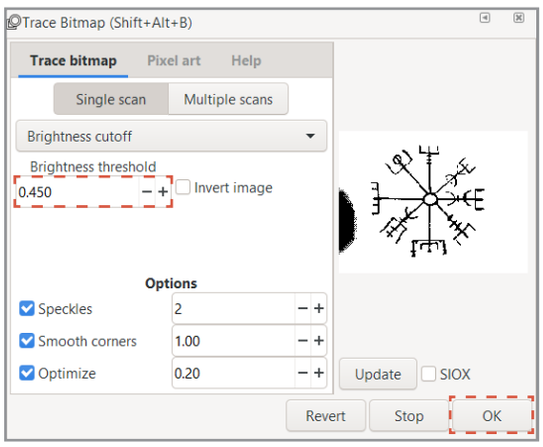
1. Start by putting the image into the Pictures folder on the computer.
2. Open Photos.
3. Select the Image.
4. Click on Crop.
5. Select the part of the image you want to use.
6. Select Save as copy.

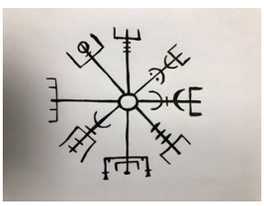
IMAGE OPENED IN INKSCAPE

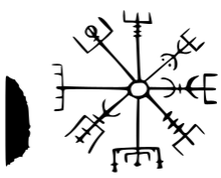
1. Open Inkscape.
2. Select **File** and press Import.
3. Select the image and press Open.
4. Press OK in the Image Import window.

TURNING AN IMAGE INTO A VECTOR

1. Select the Image.
2. Go into **Path** and press Trace bitmap.
3. Press OK and preview the copy.
4. Make adjustments if your copy is unclear.
5. Delete the original image.
6. To lock the proportion of the shape press the lock in the toolbar.



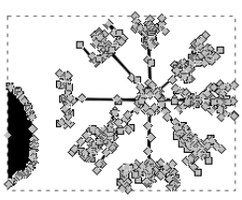


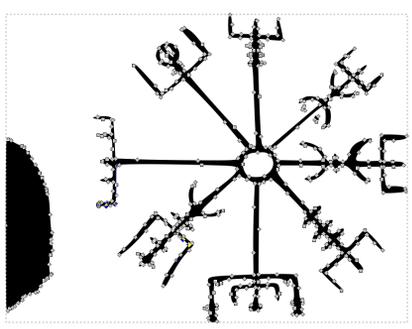


DELETING NODES

You can manipulate an image with the small square nodes surrounding it.

1. The nodes appear when you double click the image.
2. Nodes are more visible when you zoom in. Hold down Ctrl and scroll the mouse wheel to zoom.
3. Remove shadows in the image.
   -Drag the mouse over the shadow and delete the selected nodes.
4. Select the mouse icon.





ADJUSTING SHAPE SIZE

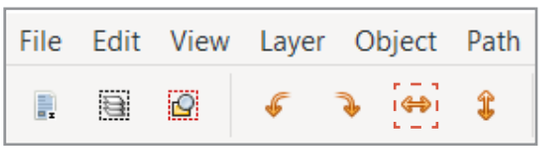
1. To lock the proportion of the shape press the lock in the toolbar.
2. Shrink or enlarge the image to the correct size.
   -Select mm and to adjust the size in millimeters.

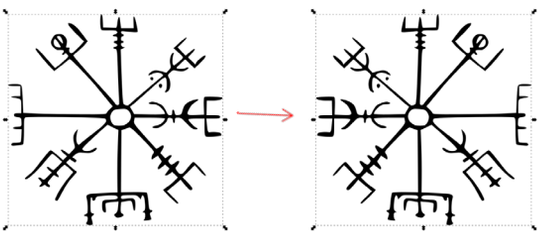
LÁTUM DRAUMANA RÆTAST

MIRRORING

Textile vinyl should always be mirrored so it's legible once pressed.

1. Select the Image.
2. Press flip selected objects horizontally.



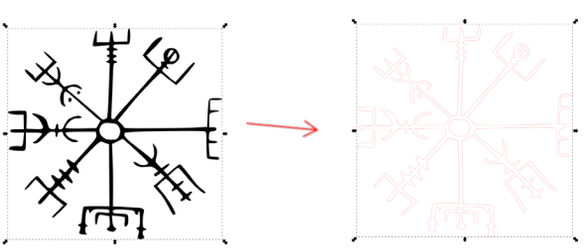


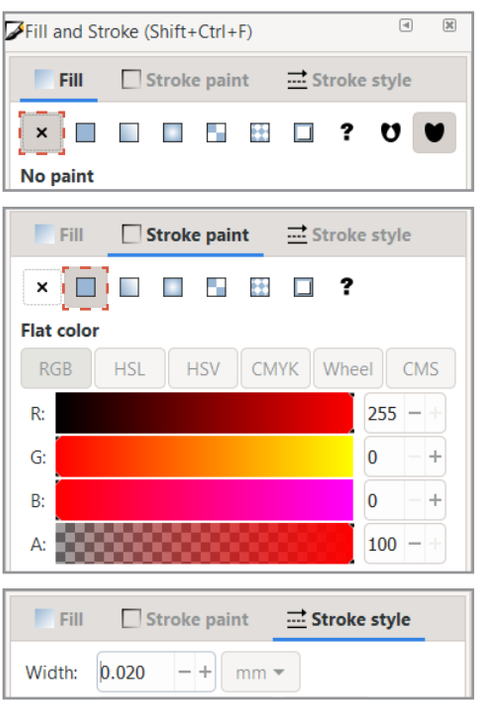
MAKING A CUTTING LINE

Cutting lines should always be RED and 0.020 mm.

1. Select the image.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.

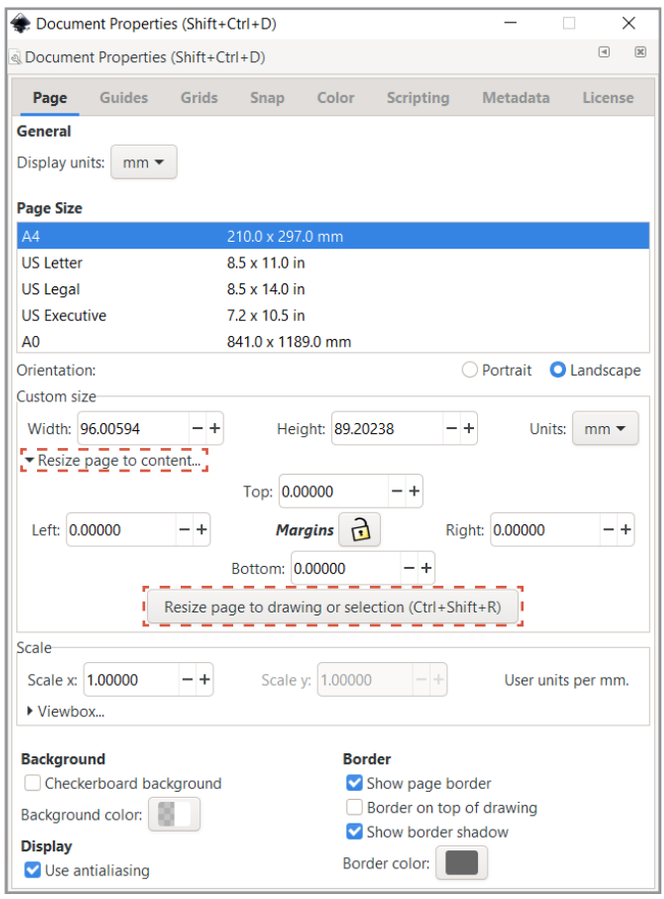
It might look like the image disappeared but if you zoom in you will see the lines are just very thin.





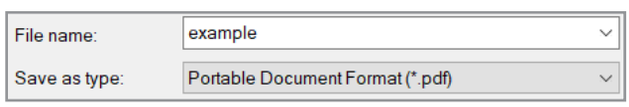
CREATING A WORKSPACE AROUND AN IMAGE

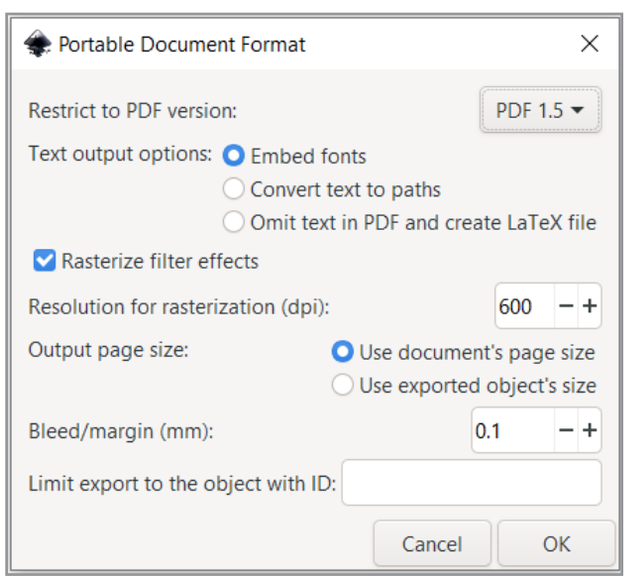
1. Select the Image.
2. Go into **File** and select Document Properties.
3. Press Resize page to content...
4. Press Resize page to drawing or selection.
5. Close this window.



SAVING YOUR PROJECT

1. Go into **File** and select Save as.
2. Give your project a name.
3. Set Save as type as .pdf
4. Press Save.
5. The Portable Document Format Window will pop up and you set it like so:
6. Press OK.





LÁTUM DRAUMANA RÆTAST

1.5 BIRTHDAY BALLOON

IMAGE CUT INTO WALL VINYL TO MAKE A BIRTHDAY STICKER

WHAT YOU NEED:

+ INKSCAPE
+ VINYLCUTTER
+ WALL VINYL
+ PLUCKING TOOL
+ TRANSFER TAPE

IMAGE OF THE DRAWING IN INKSCAPE

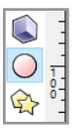
LÁTUM DRAUMANA RÆTAST

OPEN INKSCAPE

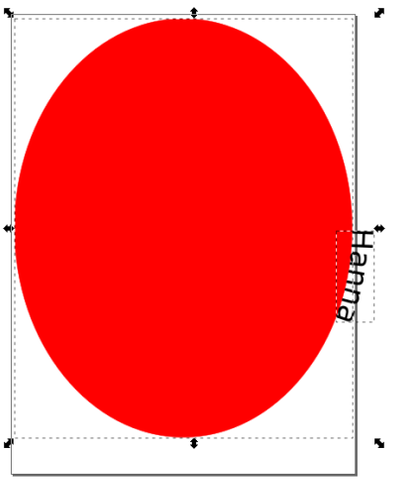
ADJUSTING THE WORKSPACE

1. **File** - Document Properties.
2. Unit – mm.
3. Width 300 and Height 400.

MAKING A CIRCLE



1. Select the circle.
2. Draw the circle with the mouse.
3. Set the height to 365 mm and the width to 295 mm.
4. Move the circle onto the workspace.
5. Color the circle red.

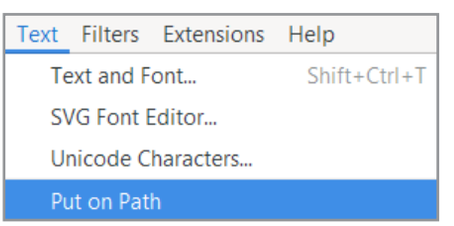


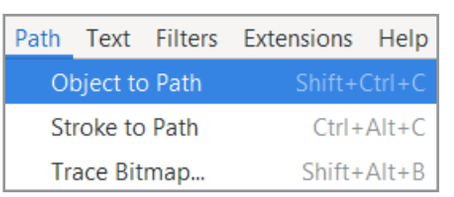
ADDING TEXT

1. Select the A symbol.
2. Write the recipient's name.

BENDING TEXT

1. Select the text and the circle.
2. Go into **Text** at the top of your screen and select Put on Path.
3. Select the text, Go into **Path** and select Object to Path.





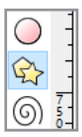
ROTATING TEXT

1. Click the text twice slowly to make the rotation arrows appear.
2. Use the arrows to rotate the text.
3. Enlarge the text so it looks good on the balloon's upper segment.

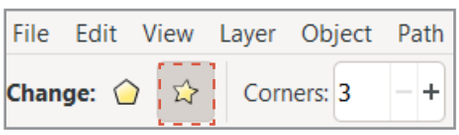
ADDING TEXT

1. Select the A symbol.
2. Write the recipient's age.
3. Enlarge so it looks good on the balloon's lower segment.

MAKING A TRIANGLE



1. Select the star on the left side of the screen.
2. Adjust so that the shape has 3 corners.
3. Draw the triangle with the mouse.
4. Click the triangle while it's selected.
5. Use the rotation arrows to align the triangle.
6. Adjust the triangle to 35 mm width and 60 mm height.
7. Move the triangle to the lower middle of the circle. Approximately half overlapping the circle.



CENTERING

1. Select everything.
2. Go into **Object** and press Align and distribute.
3. Center on the Y-Axis.

COMBINING

1. Select the circle and triangle.
2. **Path** - Union.
3. Select all of the text.
4. **Path** - Union.

SUBTRACTING

1. Select the balloon and the text.
2. **Path** - Diffrence.

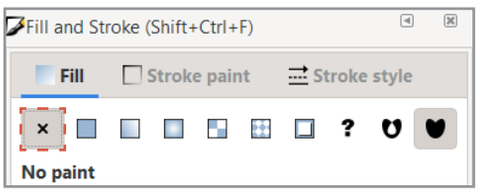
LÁTUM DRAUMANA RÆTAST

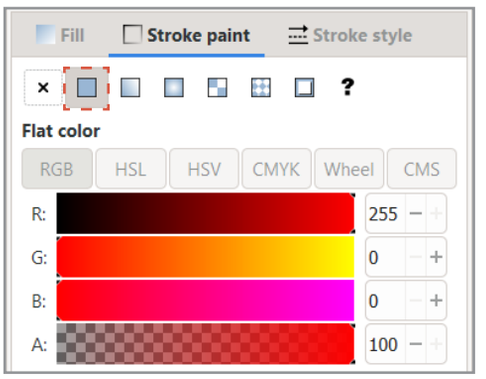
LÁTUM DRAUMANA RÆTAST

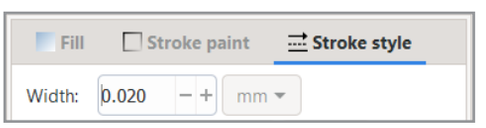
MAKING A CUTTING LINE

Cutting lines should always be RED and 0.020 mm.

1. Select the balloon.
2. **Object** - Fill and Stroke.
3. Remove Fill.
4. Stroke paint set red to full (255).
5. Stroke style and adjust to 0.020mm.

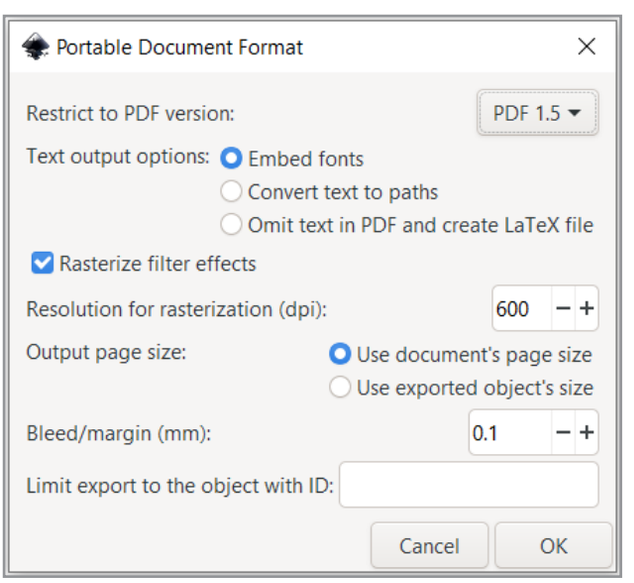






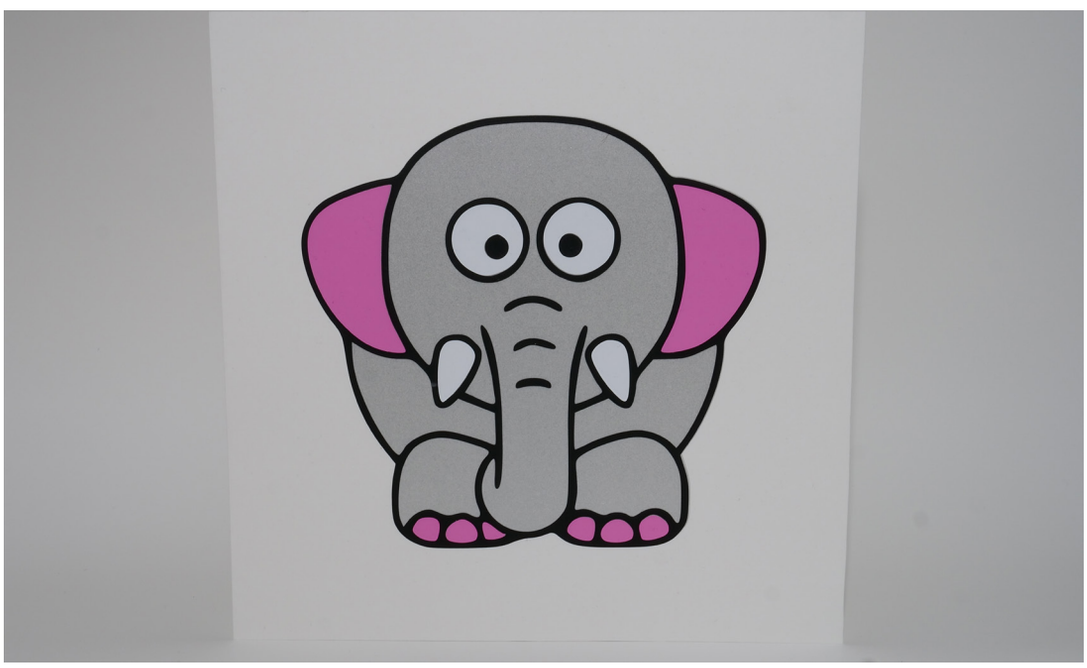
SAVING THE PROJECT

1. Go into **File** and press Save as.
2. Save the file as a .pdf
3. A window will open, Adjust it like so:



1.6 MULTICOLOR STICKER

IMAGE IS SPLIT INTO COLORS AND EACH COLOR IS CUT INTO WALL VINYL AND ARRANGED TO MAKE A MULTICOLORED STICKER



WHAT YOU NEED:

+ INKSCAPE
+ VINYLCUTTER
+ MULTIPLE COLORS OF WALL VINYL
+ PLUCKING TOOL
+ TRANSFER TAPE

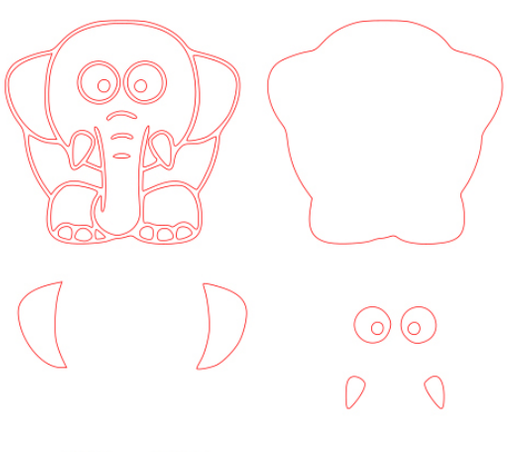
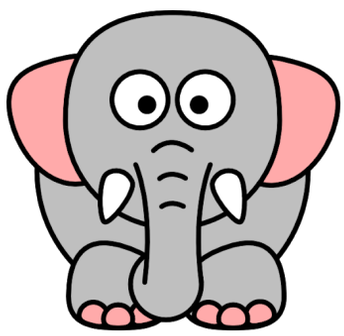


IMAGE OF THE DRAWING IN INKSCAPE

OPEN INKSCAPE

ADJUSTING THE WORKSPACE

1. **File** - Document Properties.
2. Unit – mm.
3. Width 200 and Height 200.



FINDING AN IMAGE

1. Open Google.
2. This image was found by searching for “Cartoon simple elephant”.
3. Open the image in Inkscape.

TURNING AN IMAGE INTO A VECTOR

1. Select the Image.
2. **Path** - Trace bitmap.
3. Delete the original image.
4. Lock the proportions of the image.

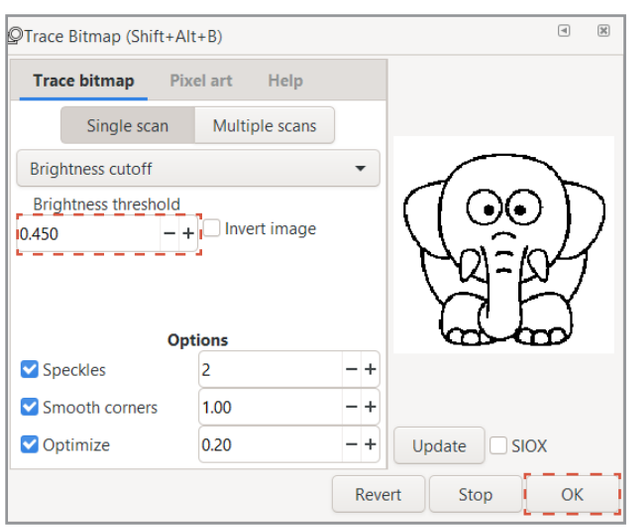
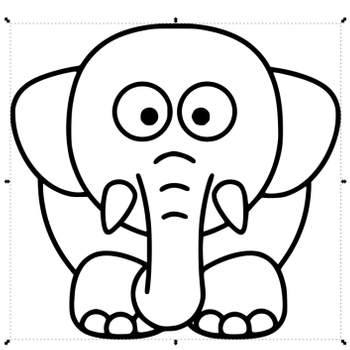


IMAGE COPIED

We will use several images in this project.

1. Select the vector image.
2. Lock the proportions of the image with the lock icon.
3. Adjust the image size so it fits onto the workspace.
4. Right click the image and select Duplicate.
5. Drag the copy to the side.

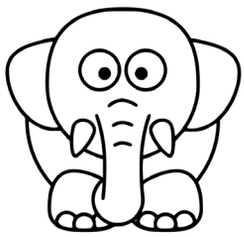


LÁTUM DRAUMANA RÆTAST

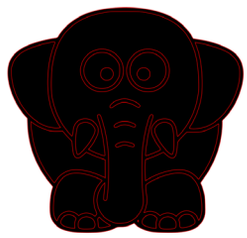
WORKING WITH A COPY

1. Select the copy, Go into **Path** and select Break apart, the image will turn black.
2. Go into **Object** and select Fill and Stroke.
3. Go into Stroke paint and select Flat color and set the red slider to 255.
4. Go into Stroke Style and set width to 0.100 mm.

The copy is now several black segments with red outlines.



Útlínumynd

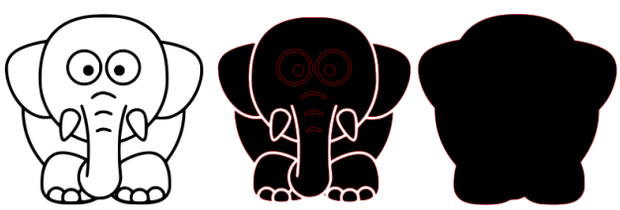


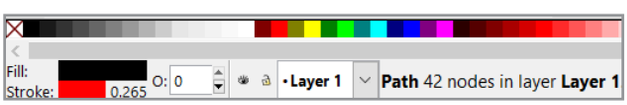
Bútamynd

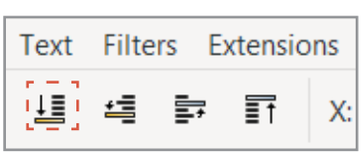
MAKING A BASE SHAPE

Remember Ctrl-Z if you pull the wrong shape.

1. Click the screen so that no image is selected.
2. Select the base shape by clicking on the outline of your segmented image and dragging the shape to the side.
3. Avoid moving the other shapes as they will be used later.
4. Now you've got an outline, segments and a base shape.
5. Change the color of the base shape, Select a gray color from the palette bar at the bottom.
6. The base shape should be on the bottom layer when moving the shapes.You can move it there by pressing Lower selection to bottom.







LÁTUM DRAUMANA RÆTAST

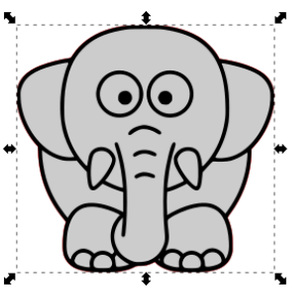
SNAP TOGETHER

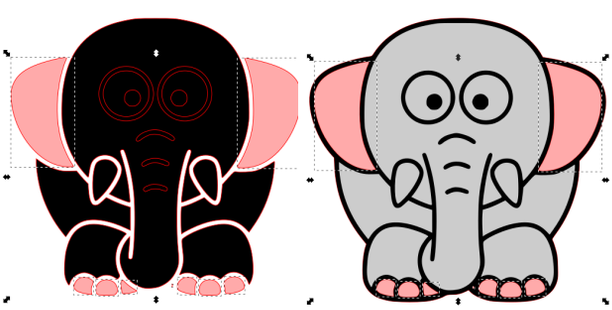
To make the parts snap together you need to have Snap nodes, paths and handles selected wich is on the right side of the screen (see on image).

COLORS ARRANGED ONTO BASE SHAPE

Instructions for whole segments, Smaller segments like the eyes are in the next part.

1. Drag the outline over the base shape.
2. The shapes should snap into place when dragged over the base shape.
3. To add more colors, We keep using the segments.
4. Hold down Shift and select all the segments that should be pink.
5. Color the segments pink with the color palette at the bottom.
6. Drag all the pink segments over the template.

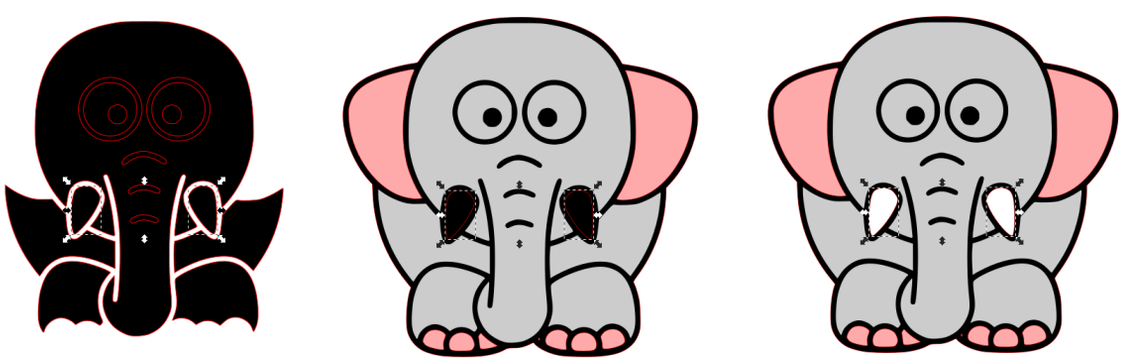




Select and color

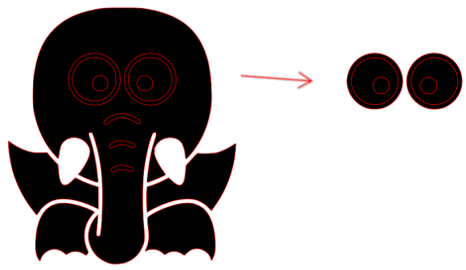
Segments dragged onto Template

7. New colors are added with same method.

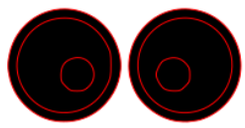


CUT SEGMENTS PLACED ONTO TEMPLATE

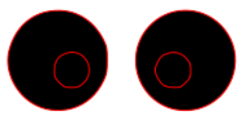
1. Go back into the segments and delete all except the eyes.



2. If you drag the eyes around you'll see that there are three layers of rings.

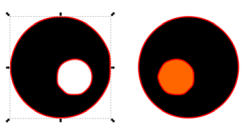


3. Delete the outer rings, That leaves two layers per eye.

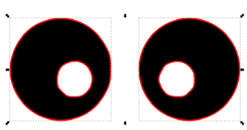


4. Color the pupils in a new color.

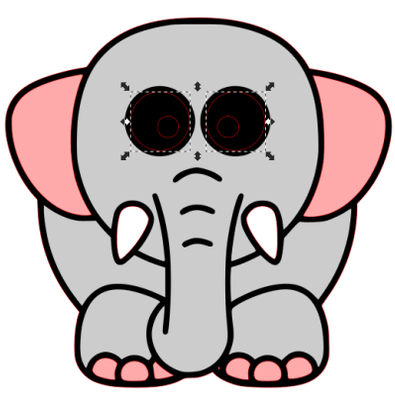
5. Select one eye, go into **Path** and select Difference.
   - The new color will disappear and the two layers combine.

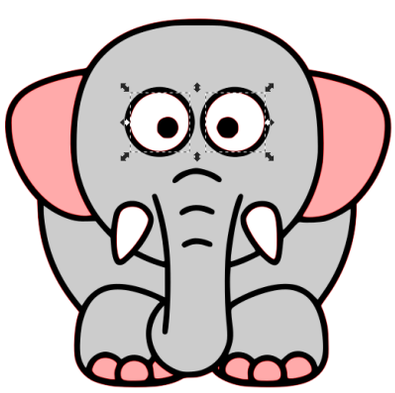


6. Select the other eye and repeat.



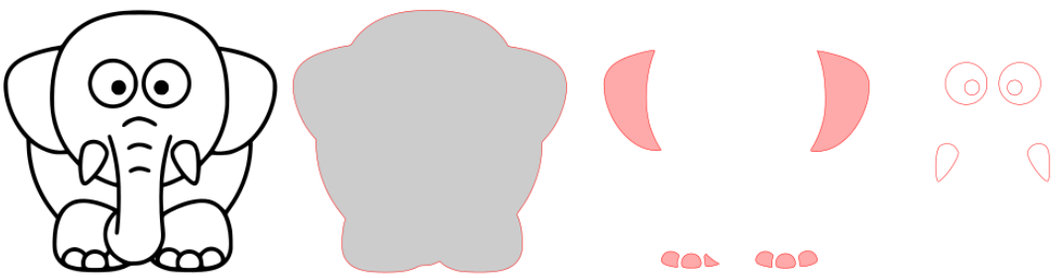
7. Select both eyes, Move them onto the template and color them white with the palette.





MAKING A DOCUMENT FOR EACH COLOR

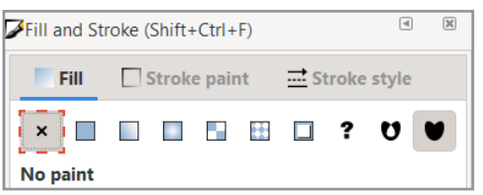
1. Select all the segments of the same color by holding down Shift.
2. Drag that color to the side.
3. Repeat for each color.

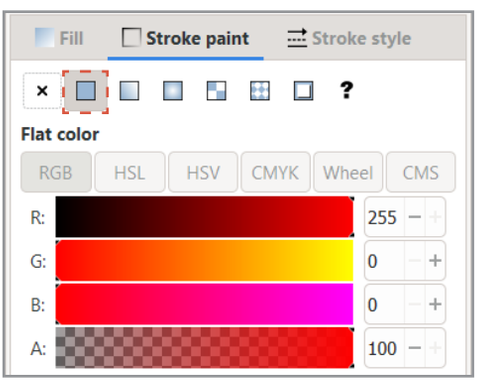


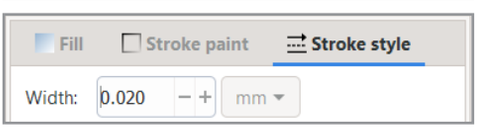
MAKING A CUTTING LINE

Cutting lines should always be RED and 0.020 mm.

1. Select the image.
2. **Object** - Fill and Stroke.
3. Remove Fill.
4. Stroke paint set red to full (255).
5. Stroke style and adjust to 0.020mm.



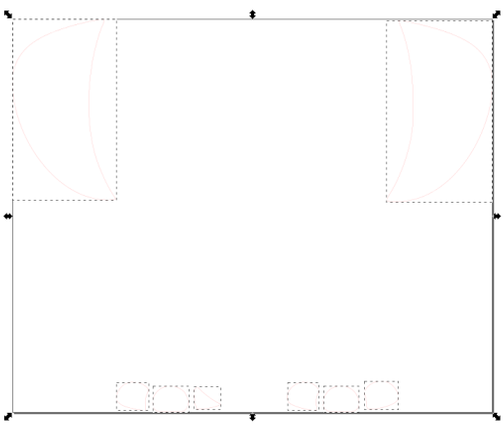


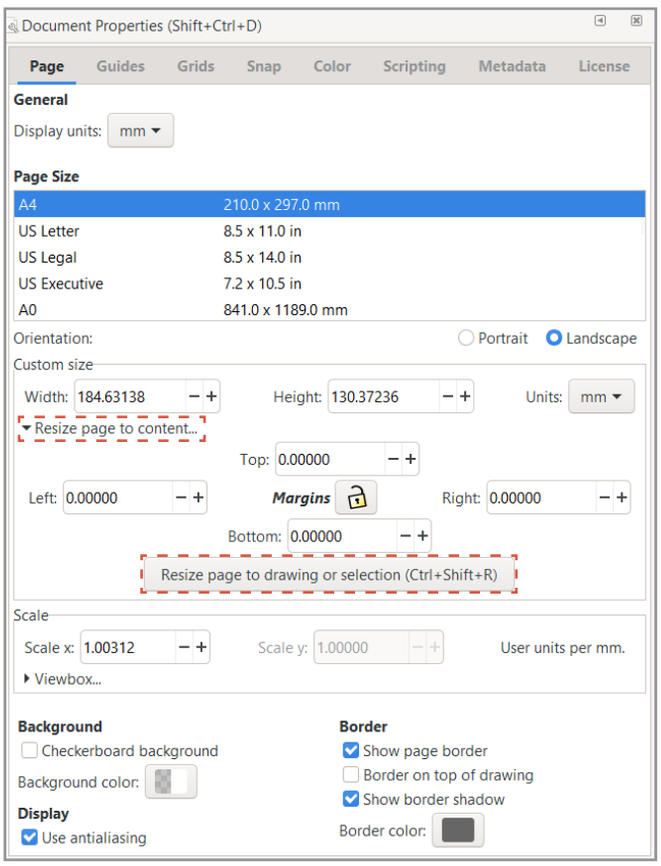


WORKSPACE FRAMED ON EACH COLOR

This needs to be repeated for each color.

1. Select surfaces that should be the same color.
2. **File** - Document Properties.
3. Resize page to content...
4. Resize page to draming or selection.
5. Before continuing to the next color, The outlines need to be saved.

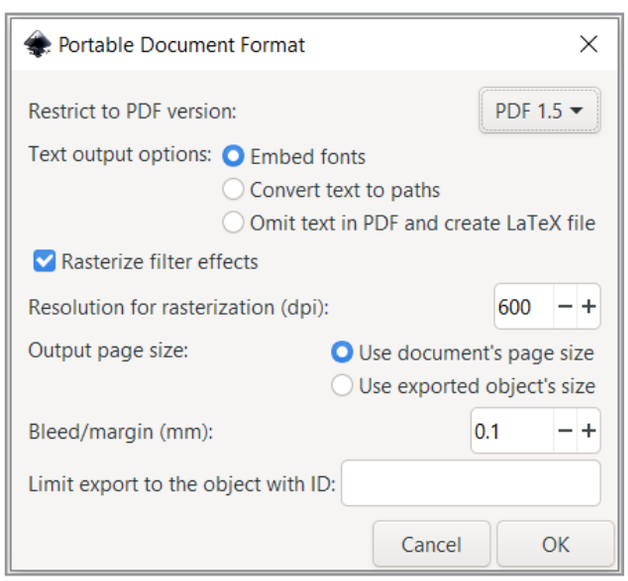




SAVING THE PROJECT

Each color needs to be saved seperately and the steps repeated for each.

1. Go into **File** and press Save as.
2. Save the file as a .pdf
3. A window will open, Adjust it like so:



LÁTUM DRAUMANA RÆTAST

SKAP
ANDI

2

Lasercutter

2.1 COASTER

CUT A RING INTO PLYWOOD OR PLEXIGLASS AND RASTER ON AN IMAGE TO MAKE A COASTER

WHAT YOU NEED

+ INKSCAPE
+ LASER CUTTER
+ 4MM PLYWOOD OR 3MM PLEXI

IMAGE OF THE DRAWING IN INKSCAPE

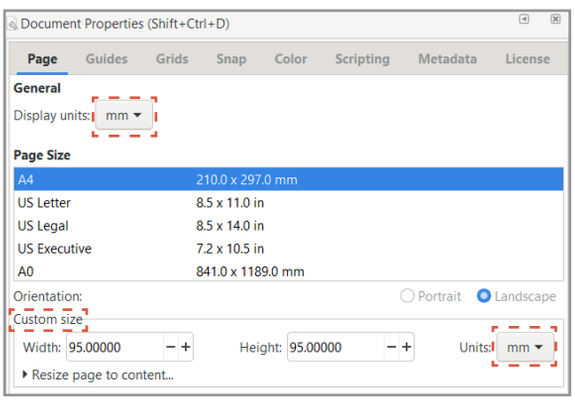
OPEN INKSCAPE

MOVING INSIDE INKSCAPE

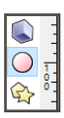
1. Zooming.
   - Holding down Ctrl and scrolling up or down will zoom in on your mouse cursor.
2. Moving in Inkscape.
   - Press down on the scroll wheel and move your mouse around.

ADJUSTING THE WORKSPACE

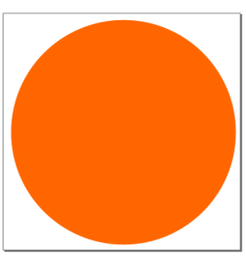
1. Go into **File** and select Document Properties.
2. Set the Units to mm.
3. Adjust width and height to 95 mm in Custom Size.
4. Now the square on your screen has changed size, you have adjusted your workspace.

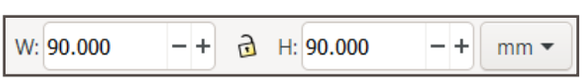


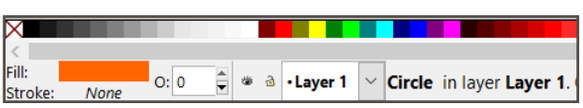
MAKING A CIRCLE



1. Select the circle on the toolbar on the left of your screen.
2. Click and drag with your mouse to draw the circle.
3. Select the mouse icon.
4. Set the width and height of the circle to 90mm with the top toolbar.
5. Move the circle onto the workspace.
6. Color the circle by selecting the ring and pressing orange on the palette at the bottom of the screen.

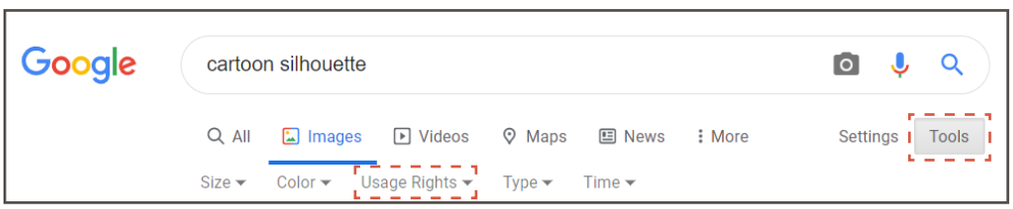






SELECTING AN IMAGE

1. Open Google.
2. Search for a Black and White image. Another useful search is “Silhouette”.

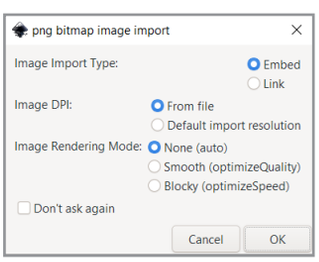


FIND A REUSABLE IMAGE

1. Select Images.
2. Go under Tools.
3. Click Usage rights and select Creativite commons licenses.
4. Save the image. Right click an image you like and select Save image as and save it.

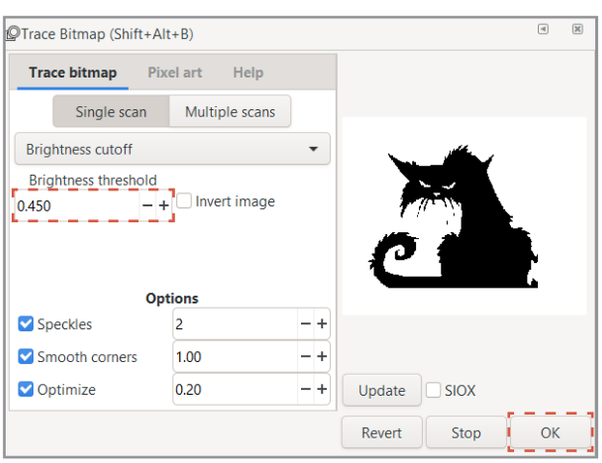
IMAGE OPENED IN INKSCAPE

1. Open Inkscape.
2. Select **File** and press Import.
3. Select the image and press Open.
4. Press OK in the Image Import window.



TURNING AN IMAGE INTO A VECTOR

1. Select the image by clicking on it.
   - Then you will see in the bottom left it says Image.
2. Select **Path** and press Trace bitmap.
3. Press OK and take a look at the copy.
   - The bottom left should now say Path.
4. If the copy is unclear adjust the setting Brightness cutoff in the Trace Bitmap window.
   - Copy too dark: Lower the Threshold Value.
   - Copy too bright: Raise the Threshold Value.
5. Delete the original image.
   To check you’re deleting the right one, pay attention to the bottom left and whether it says Image.



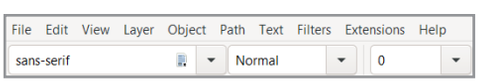
LÁTUM DRAUMANA RÆTAST

WORKING WITH SHAPES

1. When a shape is selected two things happen.
   - A square appears around the shape.
   - Information about the shape's size appear in the toolbar up top.
2. You can pull the arrows to change the shape's size.
3. To lock the proportion of the shape you can press the lock in the toolbar.
4. Lock the proportions by pressing the lock in the toolbar up top.
5. Shrink or enlarge the image so it fits into the circle with space for text.

ADDING TEXT

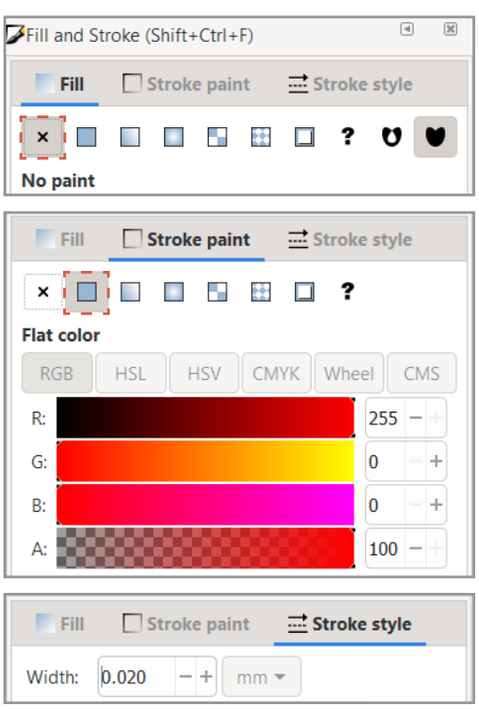
1. Select the A symbol on the left toolbar.
2. Click the screen and write your text.
3. Try different Fonts.
4. Select the Font you like best.
5. Select the text and drag it onto the circle.



MAKING A CUTTING LINE

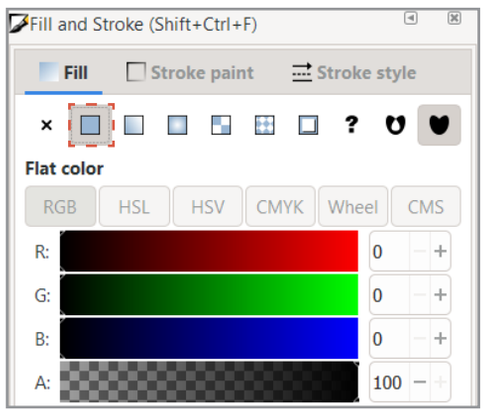
Cutting lines must be RED and 0.020 mm thick.

1. Select the circle.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.



It might look like the circle disappeared but if you zoom in you will see the lines are just very thin.

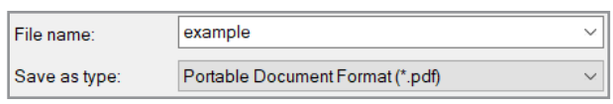
SETTINGS FOR RASTERIZATION



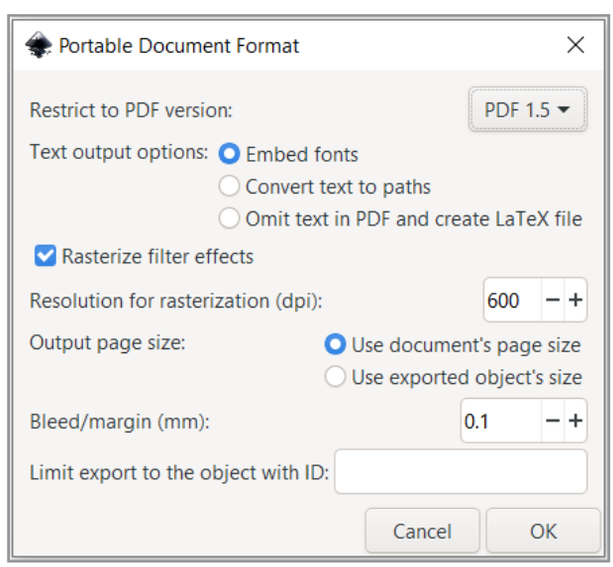
1. Select the surfaces that should be rasterized.
2. Color the surfaces black.
   - Select Fill, Press Flat color and set each color to 0.
3. Remove the cutting lines of the colored segments.
   - Click stroke paint and press ×

SAVING YOUR PROJECT

If you're in Fablab Reykjavík you can save the project in a folder called "Lasercutter" Otherwise it's best to save it on a USB flash drive.



1. Go into **File** and select Save as.
2. Select the location you want to save to.
3. Give your project a name in File name.
4. Set Save as type as .pdf
5. Press Save.
6. The Portable Document Format Window will pop up and you set it like so:
7. Press OK.



LÁTUM DRAUMANA RÆTAST

2.2 KEY CHAIN

SQUARE WITH A SMALL HOLE, CUT INTO PLYWOOD OR PLEXIGLASS
RASTERIZE AN IMAGE AND TEXT TO MAKE A KEYCHAIN

WHAT YOU NEED

+ INKSCAPE
+ LASER CUTTER
+ 4MM PLYWOOD OR 3MM PLEXI

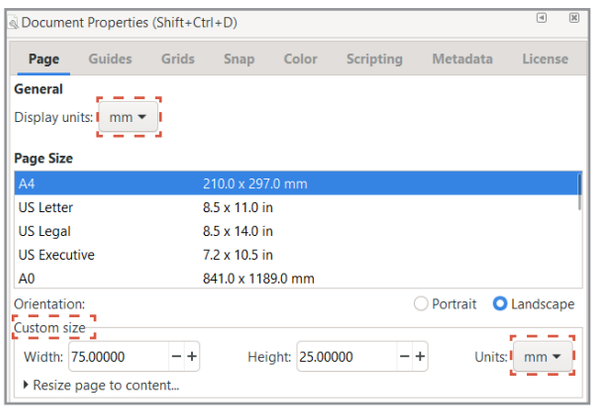
IMAGE OF THE DRAWING IN INKSCAPE

OPEN INKSCAPE

MOVING INSIDE INKSCAPE

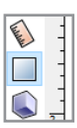
1. Zooming.
   - Holding down Ctrl and scrolling up or down will zoom in on your mouse cursor.
2. Moving in Inkscape.
   - Press down on the scroll wheel and move your mouse around.

ADJUSTING THE WORKSPACE



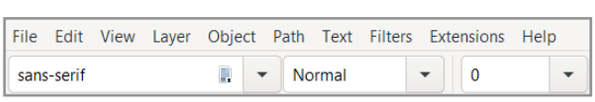
1. Go into **File** and select Document Properties.
2. Set the Units to mm.
3. Adjust width to 75 mm and height to 25 mm in Custom Size.
4. Now the square on your screen has changed size, you have adjusted your workspace.

DRAWING A SQUARE



1. Select the square shape on the left toolbar.
2. Click the screen and drag with your mouse to draw the square.
3. Doubleclick on the square to show it's dimensions.
4. Raise the Rx and Ry values to round off the corners.
5. Select the mouse icon.
6. Set width to 70 mm and height to 20 mm.
7. Move the square onto the workspace.
8. Color the box gray with the color palette at the bottom.

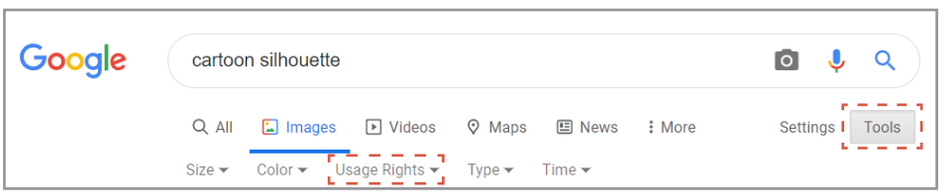
ADDING TEXT



1. Select the A symbol on the left toolbar.
2. Click the screen and write your text.
3. Try different Fonts.
4. Select the Font you like best.
5. Select the mouse icon again.
6. Press the text and lock it's proportions.
7. Adjust the text size so it fits in the shape.
8. Leave some space for an image on the right and the small hole on the left.

SELECTING AN IMAGE

1. Open Google.
2. Search for a Black and White image. Another useful search is “Silhouette”.

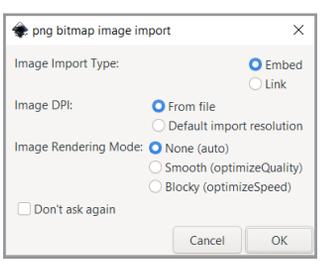


FIND A REUSABLE IMAGE

1. Select Images.
2. Go under Tools.
3. Click Usage rights and select Creativite commons licenses.
4. Save the image. Right click an image you like and select Save image as and save it.

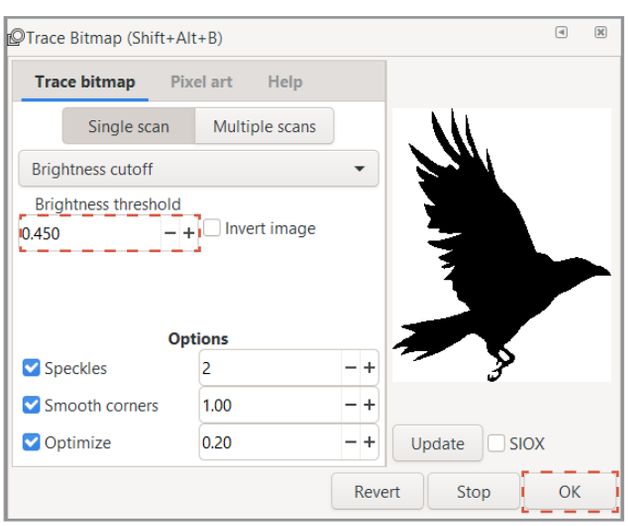
IMAGE OPENED IN INKSCAPE

1. Open Inkscape.
2. Select **File** and press Import.
3. Select the image and press Open.
4. Press OK in the Image Import window.



TURNING AN IMAGE INTO A VECTOR

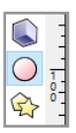
1. Select the image by clicking on it.
   - Then you will see in the bottom left it says Image.
2. Select **Path** and press Trace bitmap.
3. Press OK and take a look at the copy.
   - The bottom left should now say Path.
4. If the copy is unclear adjust the setting Brightness cutoff in the Trace Bitmap window.
   - Copy too dark: Lower the Threshold Value.
   - Copy too bright: Raise the Threshold Value.
5. Delete the original image.
   To check you’re deleting the right one, pay attention to the bottom left and whether it says Image.



WORKING WITH SHAPES

1. When a shape is selected two things happen.
   - A square appears around the shape.
   - Information about the shape's size appear in the toolbar up top.
2. You can pull the arrows to change the shape's size.
3. To lock the proportion of the shape you can press the lock in the toolbar.
4. Lock the proportions by pressing the lock in the toolbar up top.
5. Shrink or enlarge the image so it fits into the square next to the text.

HOLE FOR THE KEY CHAIN



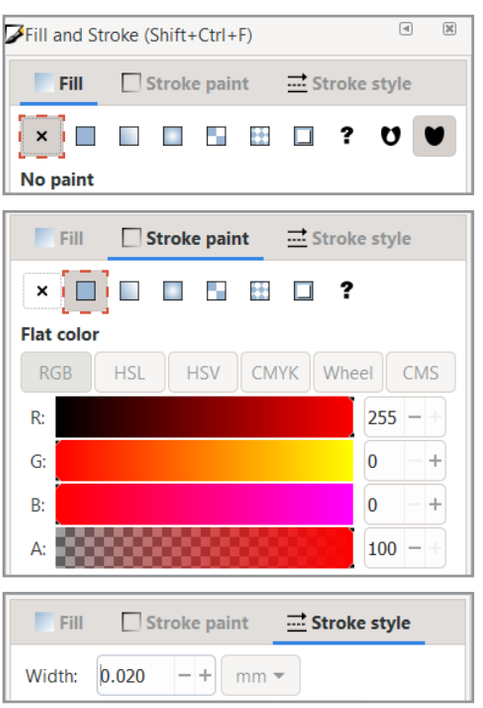
1. Select the circle on the toolbar on the left of your screen.
2. Click and drag with your mouse to draw the circle.
3. Color the circle by selecting it and coloring it green with the color palette at the bottom.
4. Select the mouse icon.
5. Set the height and width of the circle to 3 mm using the toolbar at the top.
6. Move the circle onto the square. This will be the hole for the key chain.

MAKING A CUTTING LINE

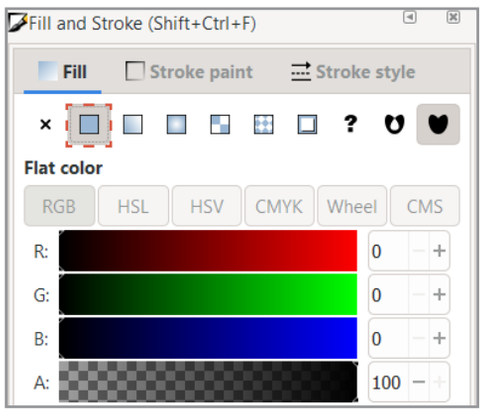
Cutting lines must be RED and 0.020 mm thick.

1. Select the circle and square.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.

It might look like the circle and square disappeared but if you zoom in you will see the lines are just very thin.



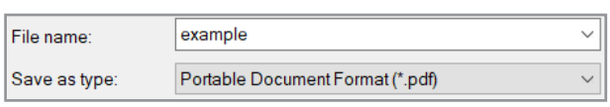
SETTINGS FOR RASTERIZATION



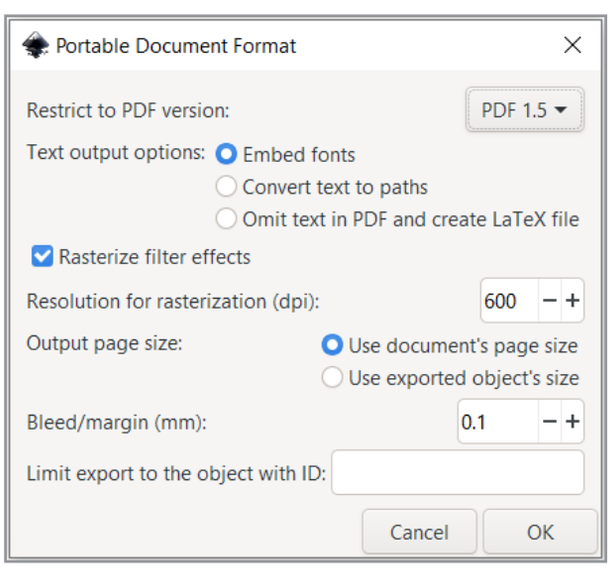
1. Select the surfaces that should be rasterized
2. Color the surfaces black.
   - Select Fill, Press Flat color and set each color to 0.
3. Remove the cutting lines of the colored segments.
   - Click stroke paint and press ×

SAVING YOUR PROJECT

If you're in Fablab Reykjavík you can save the project in a folder called "Lasercutter" Otherwise it's best to save it on a USB flash drive.



1. Go into **File** and select Save as.
2. Select the location you want to save to.
3. Give your project a name in File name.
4. Set Save as type as .pdf
5. Press Save.
6. The Portable Document Format Window will pop up and you set it like so:
7. Press OK.



LÁTUM DRAUMANA RÆTAST

2.3 PRESS FIT NAMEPLATE

SQUARE AND CIRCLE PRESS FIT TOGETHER, CUT OUT OF PLYWOOD OR PLEXIGLASS. RASTERIZE ON AN IMAGE AND TEXT TO MAKE A SMALL NAMEPLATE

WHAT YOU NEED

+ INKSCAPE
+ LASER CUTTER
+ 4MM PLYWOOD OR 3MM PLEXI

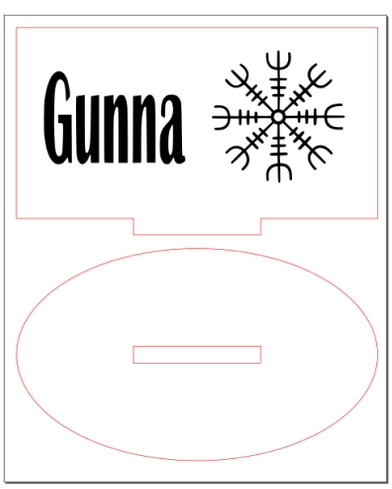
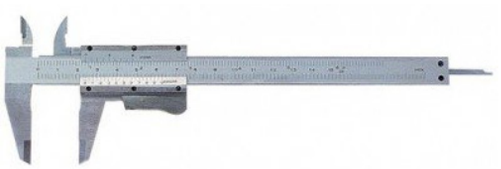


IMAGE OF THE DRAWING IN INKSCAPE

MEASURE THE THICKNESS OF YOUR MATERIAL

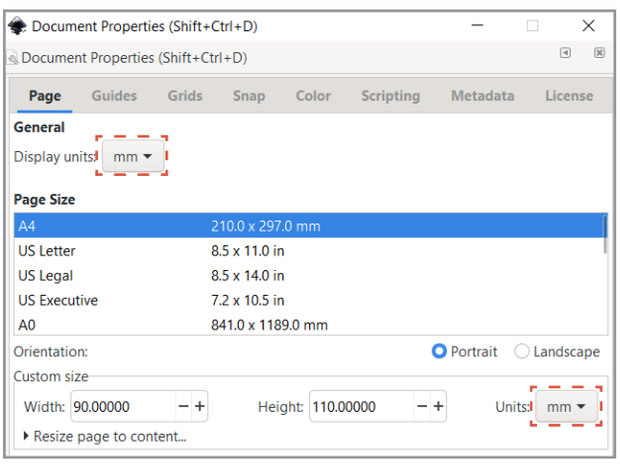
Press fits need to be precise.



1. Select a material, plexiglass, cardboard or plywood.
2. Measure the thickness with a caliper.
   - The thickness is usually between 2-6 mm.
3. Write down your material's thickness.

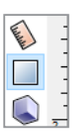
OPEN INKSCAPE

ADJUSTING THE WORKSPACE

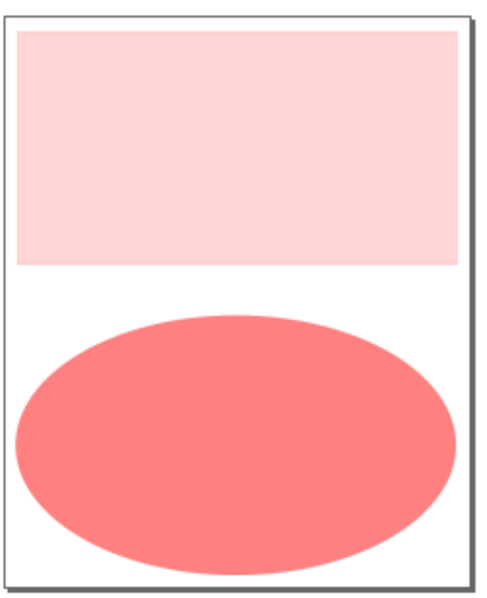


1. Go into **File** and select Document Properties.
2. Set the Units to mm.
3. Set the width to 90 and the height to 110.

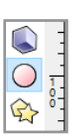
MAKING A SQUARE



1. Select the square shape on the left toolbar.
2. Click the screen and drag with your mouse to draw the square.
3. Set the width to 85 mm and height to 45 mm.
4. Move the square onto the workspace.
5. Color the square a pale red using the color palette at the bottom.



DRAWING THE CIRCLE



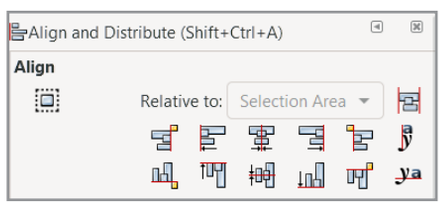
1. Select the circle on the toolbar on the left of your screen.
2. Click and drag with your mouse to draw the circle.
3. Set the width to 85 mm and the height to 50 mm.
4. Move the circle onto the workspace.
5. Color the circle red with the color palette at the bottom.

DRAWING PRESS FITS

In the instructions we assume the material is 3 mm thick. Measure your material!

1. Draw another box in a different color.
2. Check the thickness of the material you're going to use.
3. Set your size, The width should be 30 mm and the height 3 mm
   - Height is the same as your material's thickness.
4. Copy the box by right clicking and selecting Duplicate

ARRANGING PRESS FITS



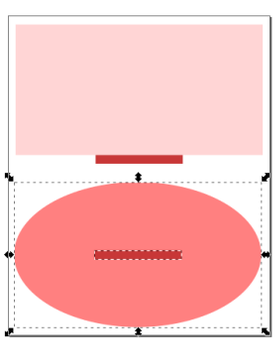
The circle

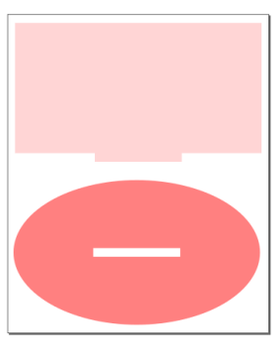
1. Drag one of the small squares to the center of the circle.
2. Select both the circle and the square by holding down shift.
3. Select **Object** and press Align and distribute in the drop-down menu.
4. Center on both axis.

The square

1. Drag the small square underneath the large square so the two squares touch.
2. Select both the square and the small one that touches it.
3. Center on the Y-Axis.

COMBINING SEGMENTS





The circle

1. Select the circle and the square inside it.
2. Go into **Path** and select Difference.
   - The small square disappears but you're left with a square shaped hole in the circle.

The square

1. Select the square and the small one that touches it.
2. Go into **Path** and select Union.
   - The squares combine into one larger shape in the same color.

ADDING TEXT

1. Select the A symbol.
2. Click the screen and write your text.
3. Try different Fonts.

Adjust the size and move the name onto the square.

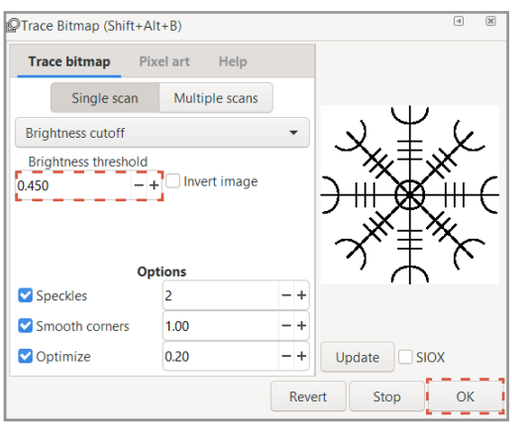
ADDING AN IMAGE

1. Find an image on Google.
2. You can search for any image but make sure to include “Black and white” or “Silhouette” in your search.
3. Remember to use a reusable image.
4. Copy the image and paste into inkscape.

   - Try to find as clear an image as possible.

TURNING AN IMAGE INTO A VECTOR

1. Select the Image.
2. Go into **Path** and press Trace bitmap.
3. Press OK and preview the copy.
4. Make adjustments if your copy is unclear.
5. Delete the original image.
6. Place the image onto the square.

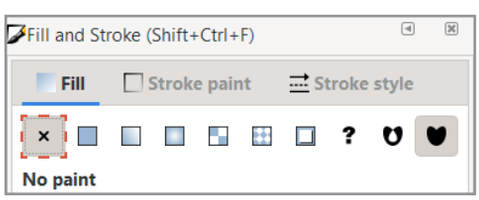


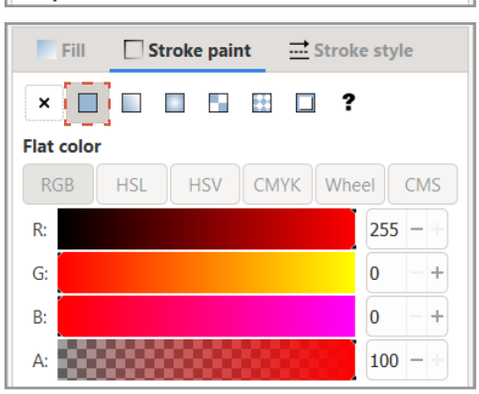
MAKING A CUTTING LINE

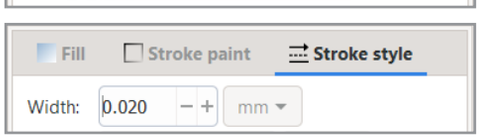
Cutting lines must be RED and 0.020 mm thick.

1. Select the circle and square.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.

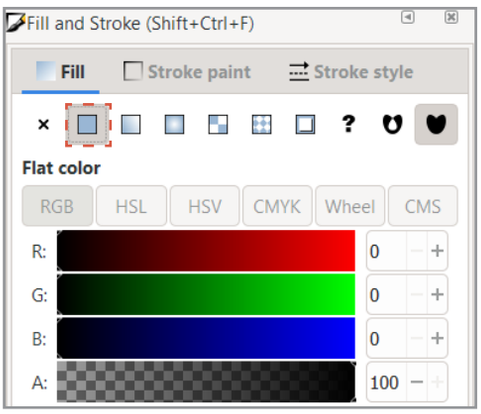
It might look like the circle and square disappeared but if you zoom in you will see the lines are just very thin.





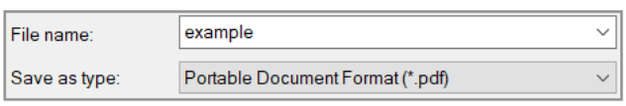


SETTINGS FOR RASTERIZATION

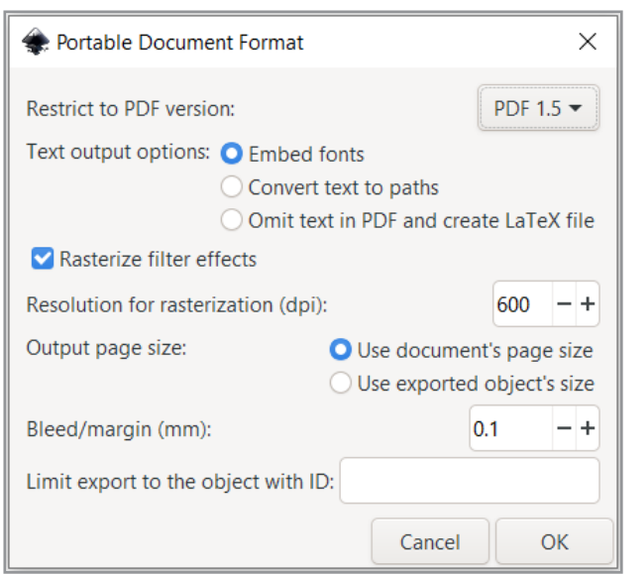


1. Select the surfaces that should be rasterized.
2. Color the surfaces black.
   - Select Fill, Press Flat color and set each color to 0.
3. Remove the cutting lines of the colored segments.
   - Click stroke paint and press ×

SAVING YOUR PROJECT



1. Go into **File** and select Save as.
2. Give your project a name.
3. Set Save as type as .pdf
4. Press Save.
5. The Portable Document Format Window will pop up and you set it like so:
6. Press OK.



If the press fit is loose try lowering the height of the square hole in the ring by about 0,1mm

LÁTUM DRAUMANA RÆTAST

2.4 SLOT FIT TREE

TREE WITH SLOT-TOGETHER FITTING CUT INTO PLYWOOD OR PLEXIGLASS TO MAKE A STANDING TREE.

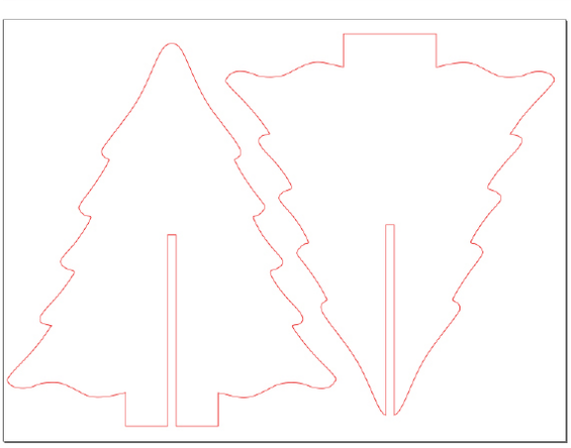


IMAGE OF THE DRAWING IN INKSCAPE

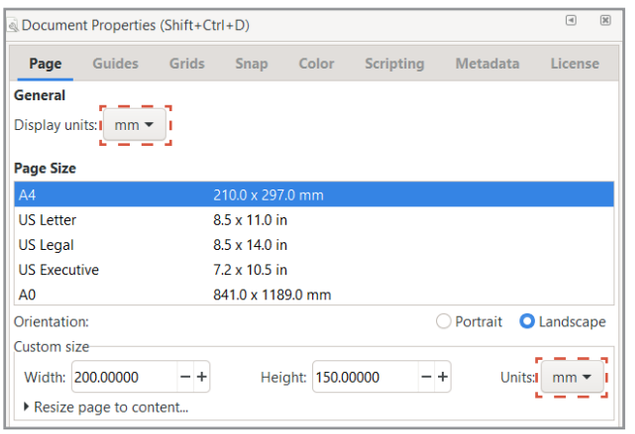
WHAT YOU NEED

+ INKSCAPE
+ LASER CUTTER
+ 4MM PLYWOOD OR 3MM PLEXI

OPEN INKSCAPE

ADJUSTING THE WORKSPACE

1. Go into **File** and select Document Properties.
2. Set the Units to mm.
3. Set the width to 200 and the height to 150.

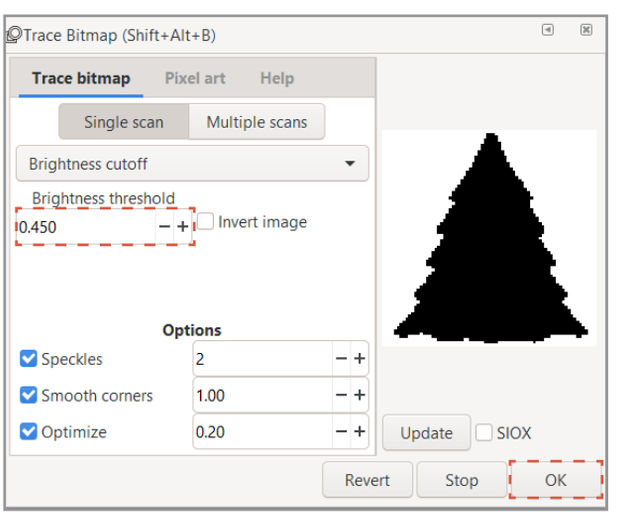


ADDING AN IMAGE

1. Find an image on Google.
2. You can search for any image but make sure to include “Black and white” or “Silhouette” in your search.
3. Remember to use a reusable image.
4. Copy the image and paste into inkscape.
   - Try to find as clear an image as possible.

TURNING AN IMAGE INTO A VECTOR

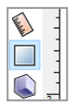
1. Select the Image.
2. Go into **Path** and press Trace bitmap.
3. Press OK and preview the copy.
4. Make adjustments if your copy is unclear.
5. Delete the original image.
6. Place the image onto the square.



ADJUST THE TREE’S SIZE

Set the width to 115 mm and the height to around 130-140 mm.

MAKING A SQUARE



1. Select the square shape on the left toolbar.
2. Click the screen and drag with your mouse to draw the square.
3. Set the width to 30 mm and the height to 20 mm.
4. Color the square black.
   - Move the square so that it fits as if it were the trunk of the tree. Make sure it's well within the tree.

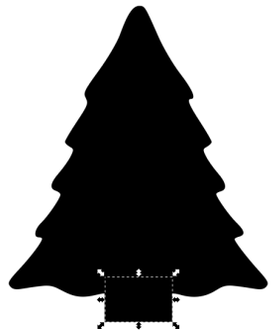
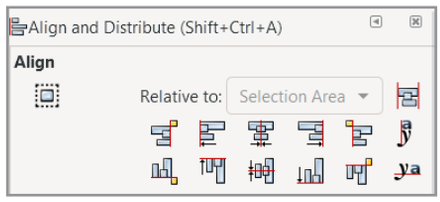
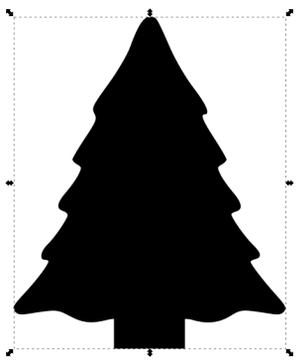


IMAGE AND SHAPE COMBINED



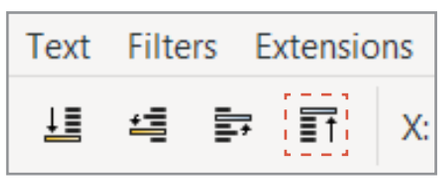
1. Select both the square and the tree.
2. Select **Object** and Align and distribute.
3. Center the shapes on the Y-axis.
4. Select both the tree and the square.
5. Go into **Path** and select Union so that they combine.



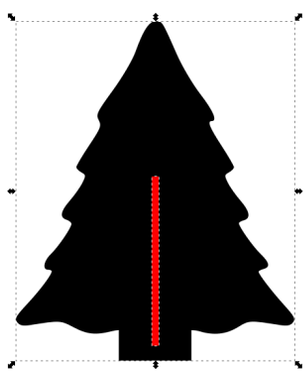
MAKING SLOT TOGETHER FITS

*The width of the slot is the same as the thickness of your material and the height is half of the height of the shape.

1. Draw a square.
2. Set the width to *3 mm and the height to *70 mm.
3. Color the slot red with the palette.
4. Click the slot and move it to the top layer.
5. Make sure the slot is on the top layer.
   -Press the layer button at the top.



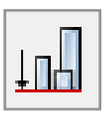
This size can not change or else the tree will not fit together.

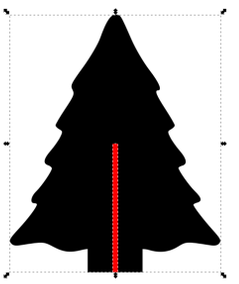
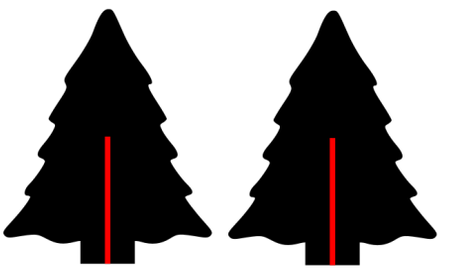


LÁTUM DRAUMANA RÆTAST

SLOTS POSITIONED

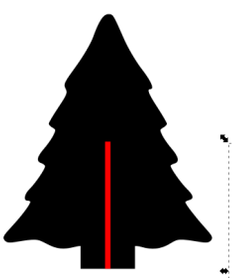
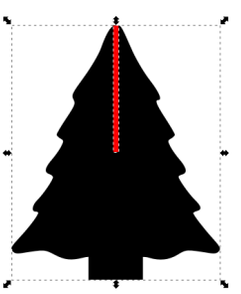
1. Select both the tree and the slot.
2. Go into **Object** and press Align and distribute.
3. Center on the Y-axis and align on the bottom line.
4. Copy both the tree and the slot.
5. Drag the copy to the side.
6. Go into **Object** and press Align and distribute.
7. Select center on the Y-axis and align on the top.



SHAPES COMBINED

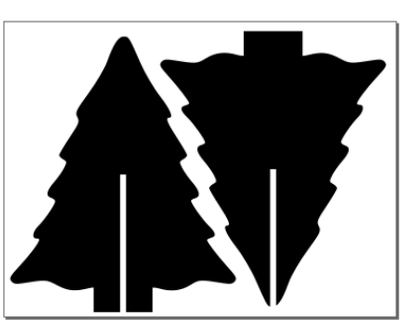
1. Select one tree and slot.
2. Go into **Path** and select Difference.
   - The red square disappears and turns into a slot.
3. Repeat for the other tree.

SHAPE PLACED ONTO WORKSPACE

Make sure both trees are inside the workspace without touching.

1. To utilize the material as well as possible it's best to arrange them inside the workspace.
2. Select either tree and move it into the workspace.
3. Select the other tree and press Rotate selection 90° clockwise two times.
4. Drag the tree onto the workspace.
5. Watch that the trees do not touch.



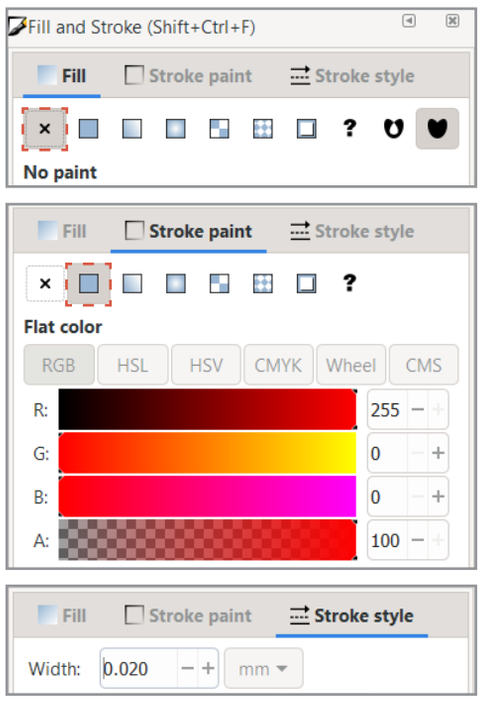
Remember that at this phase the size cannot change because the trees would not fit together.

MAKING A CUTTING LINE

Cutting lines must be RED and 0.020 mm thick.

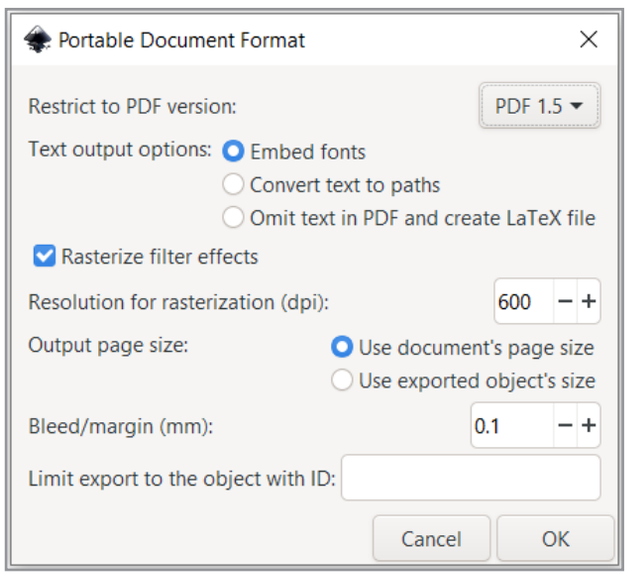
1. Select the image.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.

It might look like the image disappeared but if you zoom in you will see the lines are just very thin.



SAVING YOUR PROJECT

1. Go into **File** and select Save as.
2. Give your project a name.
3. Set Save as type as .pdf
4. Press Save.
5. The Portable Document Format Window will pop up and you set it like so:
6. Press OK.



2.5 PUMPKIN

CUTTING LINES MADE TO MAKE A PUMPKIN OUT OF PLYWOOD OR PLEXIGLASS.

WHAT YOU NEED

+ INKSCAPE
+ LASER CUTTER
+ 4MM PLYWOOD OR 3MM PLEXI

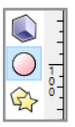
IMAGE OF THE DRAWING IN INKSCAPE

OPEN INKSCAPE

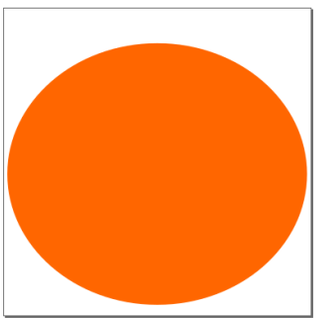
ADJUSTING THE WORKSPACE

1. **File** - Document Properties.
2. Unit – mm.
3. Width 200 and Height 200.

MAKING A CIRCLE

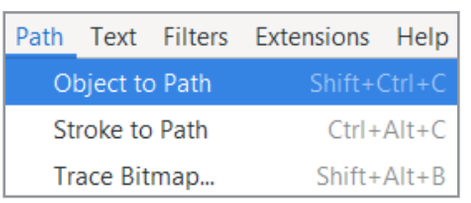


1. Select the circle.
2. Draw the circle with the mouse.
3. Set the width to 195 mm and the height to 170 mm.
4. Move the circle onto the workspace.
5. Color the circle orange.



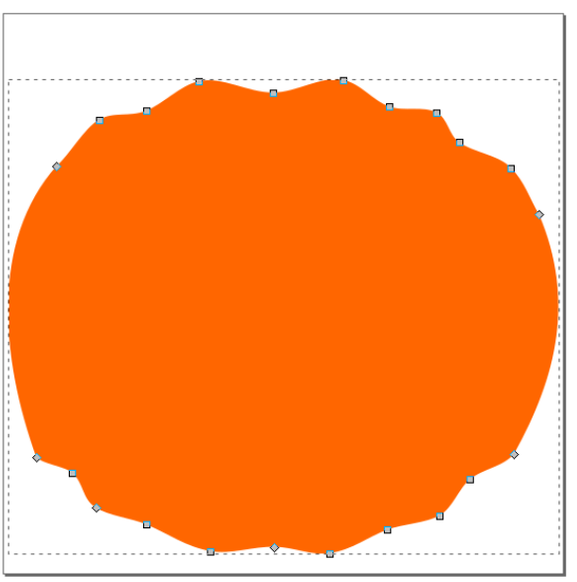
TURNING A CIRCLE INTO A PATH

1. Select the circle.
2. Go into **Path** and select Object to Path.
   - Now you can distort the circle.

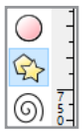


WORKING WITH NODES

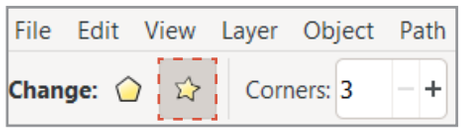
1. Doubleclick the circle.
   - Four small boxes appear that are referred to as nodes. You can move these to manipulate your shape.
2. To add nodes doubleclick on the edge of the circlre.
   - It's best to zoom in on the circle to get a clearer view of what you're doing.
3. Add 5 new nodes between the already existing nodes.
   - These nodes should be closer to the top and bottom of the circle but not at the sides.
4. Move one node at a time so they form a zig zag pattern.
5. Start with the center node and work your way out.



ADDING EYES



1. Select the star on the left side of the screen.
2. Adjust so that the shape has 3 corners.
3. Draw the triangle with the mouse.
4. Click the triangle while it's selected.
5. Use the rotation arrows to align the triangle.
6. Set the triangle to 40 mm width and 45 mm height.
7. Move the eye to it's place.
8. Right click the eye and press Duplicate.
9. Hold down Ctrl and drag to the side.

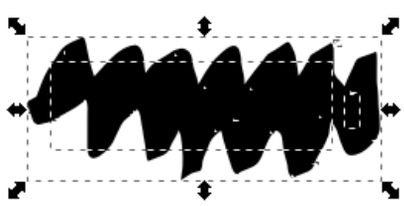


DRAWING THE MOUTH

1. Select the pen and draw a mouth.
   - Make sure the start and end meet.
2. Select the mouth and go into **Path** and select Union.
3. Go into **Path** and press Break apart.
   - Now the mouth is segmented.
4. Click the screen so that no shapes are selected.
5. Select the outline of the mouth and drag the shape aside.
6. Delete the remaining shapes.
7. Move the mouth onto the pumpkin, Adjust the size as needed.

1.

3.



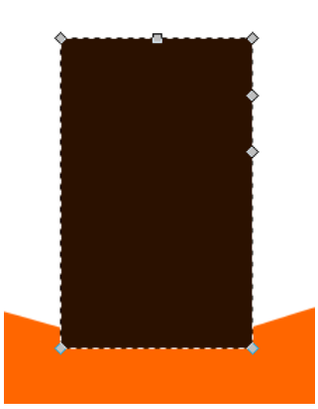
5.

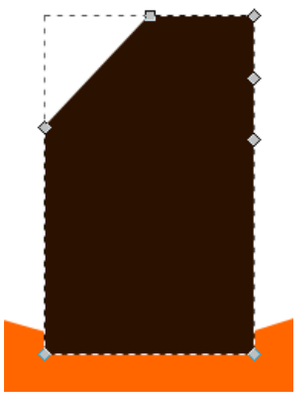
7.

LÁTUM DRAUMANA RÆTAST

THE TOP OF THE PUMPKIN

1. Add a square as you did the cirkle earlier.
2. Width 18 mm and height 30 mm.
3. Go into **Path** and select Object to Path.
4. Doubleclick the square.
5. Add three nodes, One at the center top, and the other two on the right side slightly above center and between it and the right corner.
6. Drag the left corner slightly downwards.
7. Drag the right corner and the one below it further to the right and slightly up.





COMBINING

1. Select the pumpkin and the top.
2. **Path** - Union.
3. Selec the eyes and the mouth.
4. **Path** - Union.

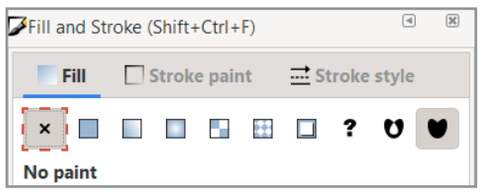
SUBTRACTING

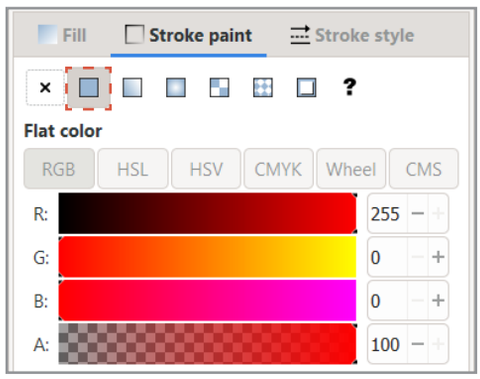
1. Select the face and the pumpkin.
2. **Path** - Diffrence.

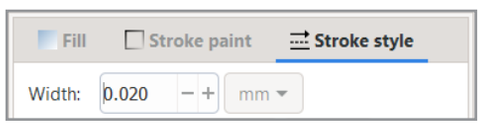
MAKING A CUTTING LINE

Cutting lines should always be RED and 0.020 mm.

1. Select the pumpkin.
2. **Object** - Fill and Stroke.
3. Remove Fill.
4. Stroke paint set red to full (255).
5. Stroke style and adjust to 0.020 mm.

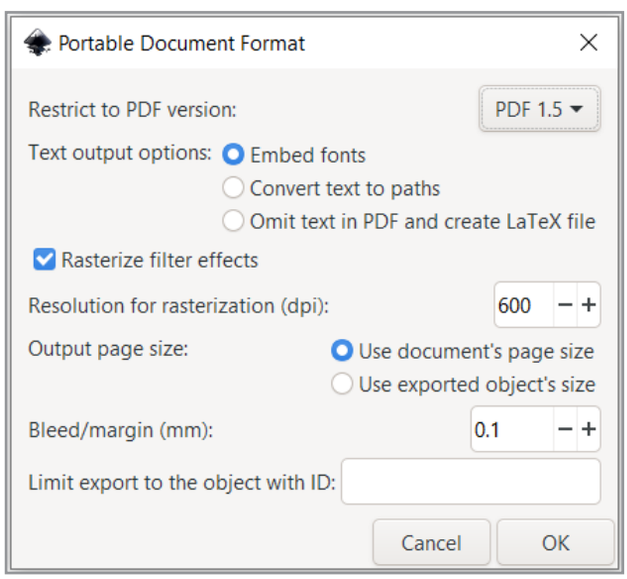






SAVING THE PROJECT

1. Go into **File** and press Save as.
2. Save the file as a .pdf
3. A window will open, Adjust it like so:



LÁTUM DRAUMANA RÆTAST

2.6A SLICER FOR FUSION 360

3D FILE PUT INTO SLICER FOR FUSION 360, SLICED INTO LAYERS, CUT INTO CARDBOARD IN LASER AND PUT TOGETHER

WHAT YOU NEED

+ SLICER FOR FUSION 360
+ INKSCAPE
+ LASERSCUTTER
+ CARDBOARD
+ GLUESTICK

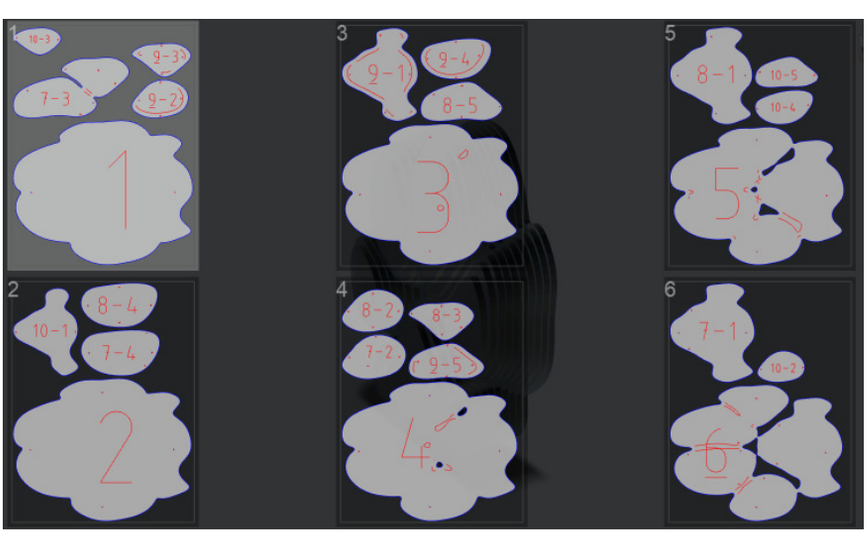
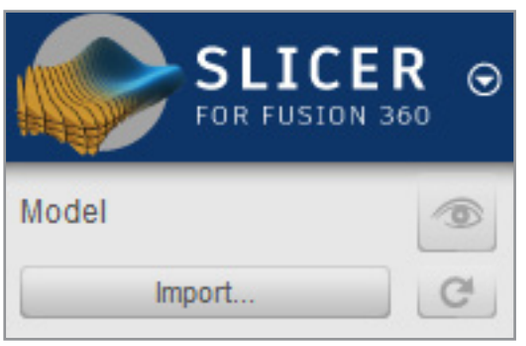


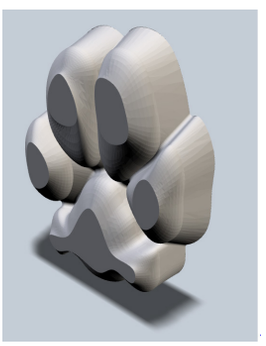
IMAGE OF THE DRAWING IN SLICER FOR FUSION 360

In this project the program Slicer for Fusion 360 is used. The program reads a 3D document and slices it into layers which we can laser cut. Two different cutting lines are created, one cuts all the way through te material but the other marks the layers so it's easier to arrange them into the final shape. When the documents are sent to the laser we use the color mapping settings in the lasercutter. The color mapping instructions can be found after this recipe.

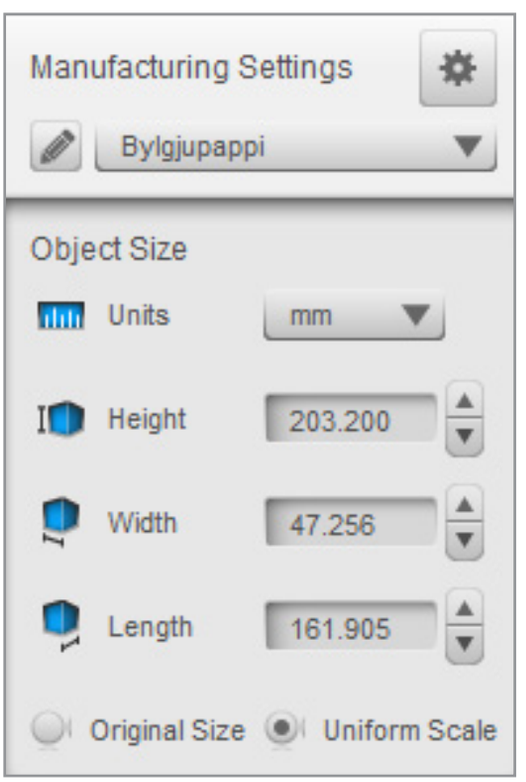
INSERTING A FILE



1. Open Sliserforfusion360.
2. Select Import.
3. Select the stl. document you want to use.



SETTING AMATERIAL



1. Open the window Manufacturing Settings by clicking the pencil.
2. Select cardboard if the option is available.
3. To add a new material, Press +.
4. Check that the units are set to mm.
5. Input the height, width and thickness of the cardboard.
6. Click Done.

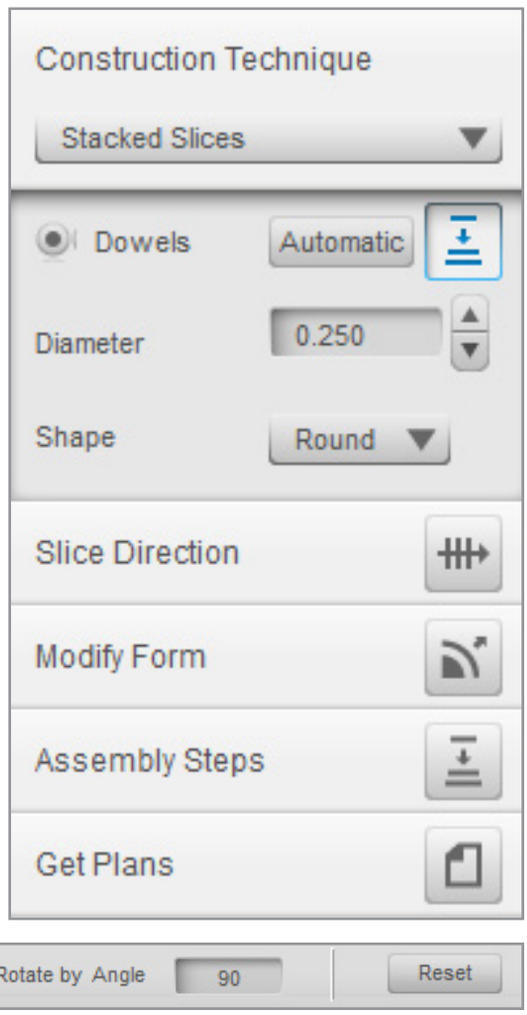
SET THE SIZE OF THE OBJECT

1. Check Object Size.
2. Set the units to millimetres (mm) in Units.
3. Tick Uniform Scale.
4. Set the height to 150 mm to get a 15 cm object.

Other units will translate to correct proportions so you can input another size if that suits your project better.

LAYERING

In this project we will create slices that stack so we select Stacked Slices.

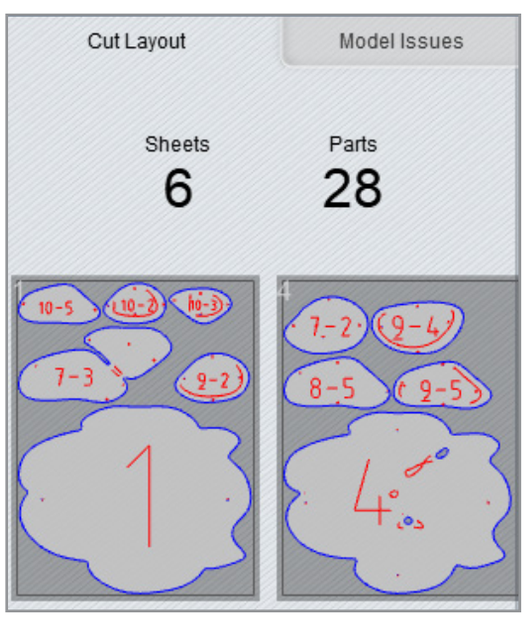


1. Select Stacked Slices in Construction Technique (You can preview other techniques by changing the setting in Construction Techniques if you want to).

2. Check Dowels to help with the construction.
   - It's good to use grill pins to help putting it together. Set Dowels to 2.5mm if you're using them.

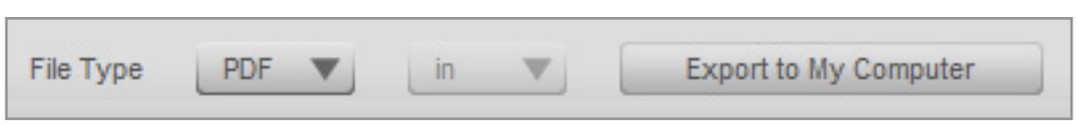
3. In Slice Direction you can adjust how the slice should align, Usually sliced vertically or horizontally.
   - Click the circle on the axis that you want to turn.
   - On the bottom center you can write how many degrees you want to turn. It's good to try 90° first.

4. Check the Cut Layout window on the right side of the screen to see how the slices arrange onto the material.



SAVING THE SLICES

1. Click Get plans.
2. Select pdf. in File Type at the bottom towards the middle.
3. Click Export to my computer.



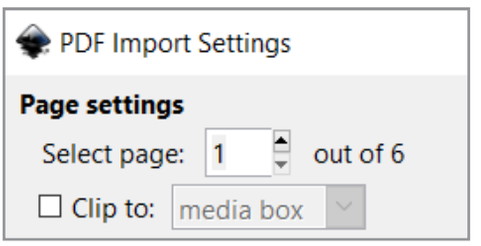
LÁTUM DRAUMANA RÆTAST

INKSCAPE

Inkscape is used to ensure the cutting lines are correct. We use both red and green cutting lines and they should all be whole colors and 0.020 mm wide. The image is a vector drawing so we can start manipulating the lines right away.

INSERTING THE DOCUMENTS INTO INKSCAPE

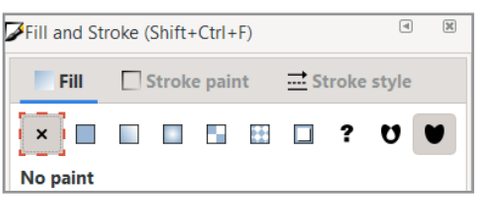
In this project you need to insert one page at a time and manipulate it before moving onto the next.



1. Drag the document into Inkscape.
2. A window opens with Page settings.
3. Since we're dealing with several documents you'll need to select a page to work with.

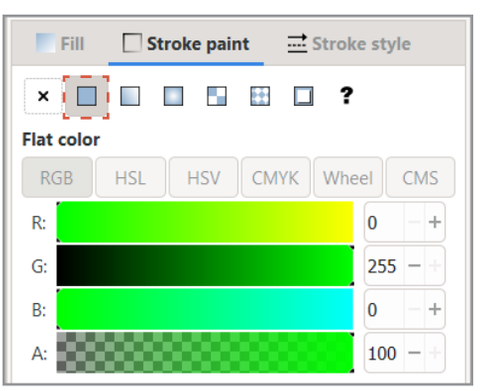
ADJUSTING CUTTING LINES

Here are two different colors of Cutting lines.



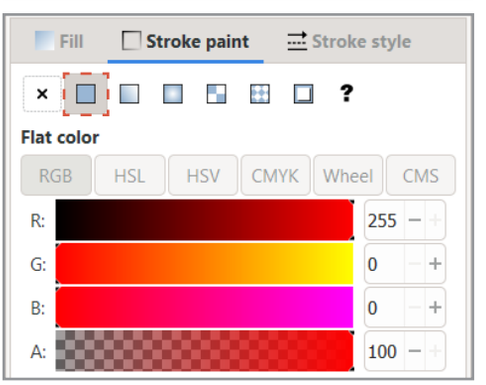
Change all the red lines to green.

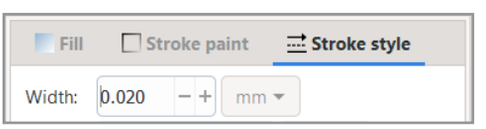
1. Select one Red Line.
2. Go into **Edit.**
3. Click Select Same and press Stroke Color Then you select every red line.
4. Go into **Object** and select Fill and Stroke.
5. Click á Fill and press ×
6. Click on Stroke paint the line green (G:255).
7. Go into Stroke style and set it to 0.020 mm.



Change all the blue lines to red.

1. Select one blue line.
2. Go into **Edit.**
3. Click Select Same and press Stroke Color. Now you have selected every blue line.
4. Go into **Object** and select Fill and Stroke.
5. Click Fill and press ×
6. Click on Stroke paint and color the line red (R: 255).
7. Go into Stroke style and set it to 0.020 mm.





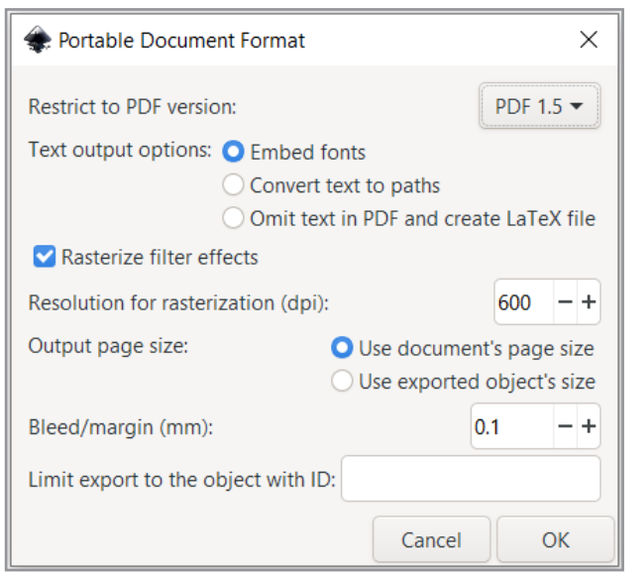
WORKSPACE FRAMED TO SELECTION

1. Select everything.
2. **File** - Document properties.
3. Resize page to content...
4. Resize page to drawing or selection.

SAVING MULTIPLE DOCUMENTS

Save each document with a name and page number.

1. Go into **File** and press Save as.
2. Save the file as a .pdf
3. A window will open that you set like so:



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INSTRUCTIONS FOR COLOR MAPPING ON THE NEXT PAGE

2.6B INSTRUCTIONS: COLOR MAPPING

Cutting lines should always be red and 0.020 mm or should they?

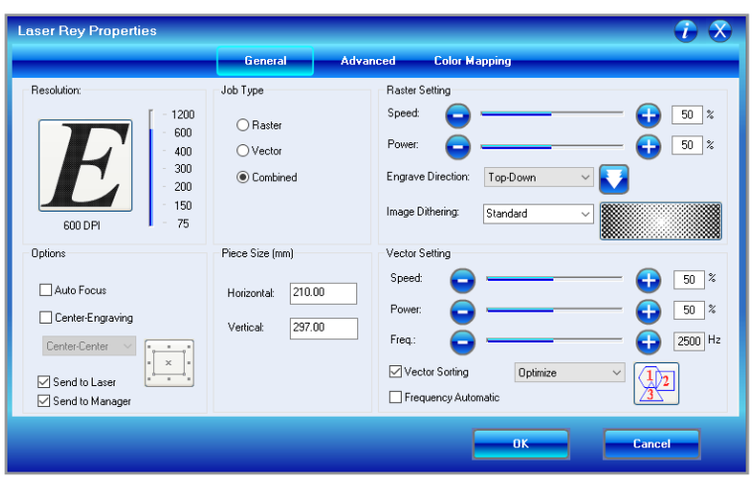
Here at Fab Lab we use the rule of thumb that the cutting line is 0.020 mm, The reason for this is that the lasercutter interprets all lines that are less than one pixel as cutting lines Pixel size varies depending on image resolution but 0.020 mm is the thinnest line a .pdf file can store in most programs. The lasercutter also only understands colors it's programmed to. The 0.020 mm rule of thumb makes projects a lot more consistent in execution.
Both you and the laser know that 0.020 mm red means cut.

Color mapping is used to control the depth of the cut, With different colors meaning different intensities. Red means straight through. Cutting lines that should not go through are also 0.020 mm wide, But in different colors.The colors you select in Inkscape need to be the same as the colors selected in the lasercutter's printing window. To simplify color mapping we suggest using green (R:0 G:255 B:0) or Blue (R:0 G:0 B:255).

These instructions showcase how a color mapped document is cut in the lasercutter.

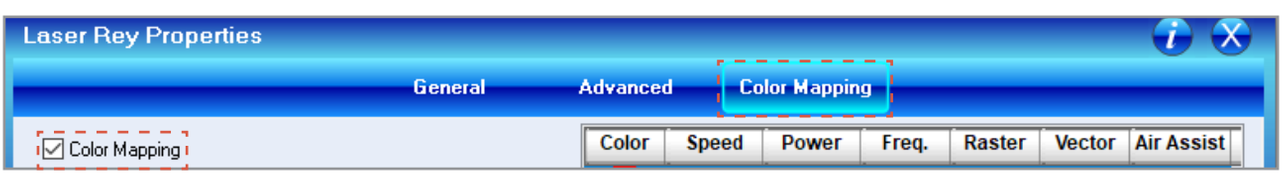
AÐ STILLA PRENTUN

1. Open the pdf. file.
2. Press print (Printer icon)
3. Select the laser you want to use from the drop down menu.
4. Press Properties.
5. Input the settings for your material.
6. Click on color mapping.



COLOR MAPPING

1. Select Color mapping.



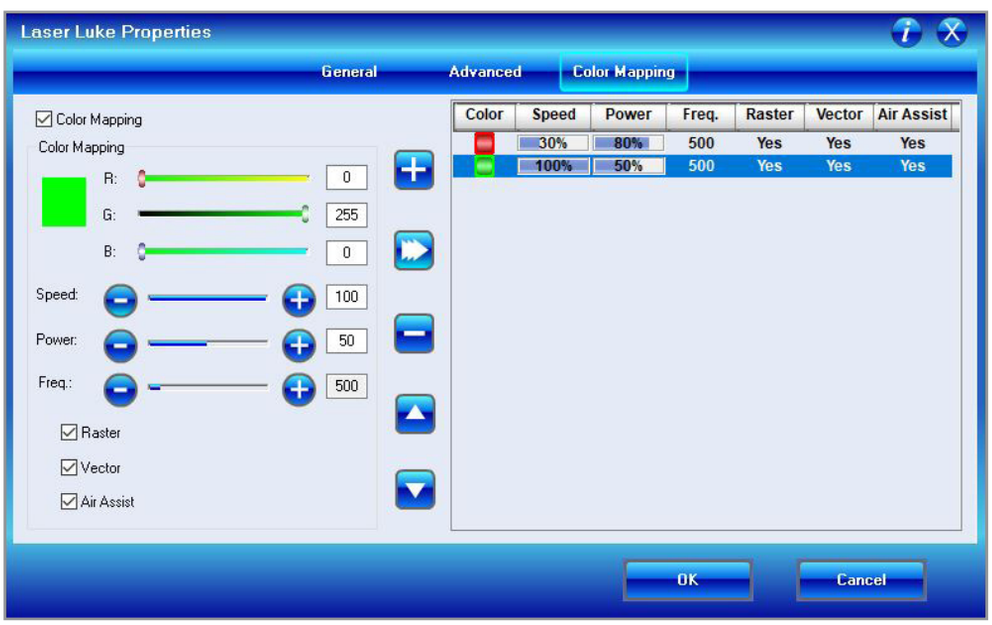
2. Tick Color Mapping.

SET COLORS

Set the colors the laser should cut and the speed, power and frequency.
It's best to start by setting the red line's settings.

1. Click a color and input the cutting line settings.
2. Press the three arrows to save the settings.
3. Select the next color and set it's settings.
4. Move the red color to the bottom so that it's the last thing the machine will cut.
5. To add new colors press the plus symbol.
6. To remove a color, select it and press the minus symbol.
7. Press OK.

The file transfers to the lasercutter



We reccommend using settings you already know work, Such as those on the wall in Fab Lab Reykjavík. To get a shallower cutting line reduce the speed or power of the lasercutter.

Examples of settings for cardboard

	Red (Cut through)	Blue	Green
Speed	30	100	100
Power	80	50	50
Freq	500	500	500

Do some test runs to check which settings suit your project best.

2.7 LASER EXTRA: BOX

BOX MADE WITH A WEB TOOL

It's best to have already completed the first three laser projects before this one.

WHAT YOU NEED

+ INKSCAPE
+ LASER CUTTER
+ 4MM PLYWOOD OR 3MM PLEXI

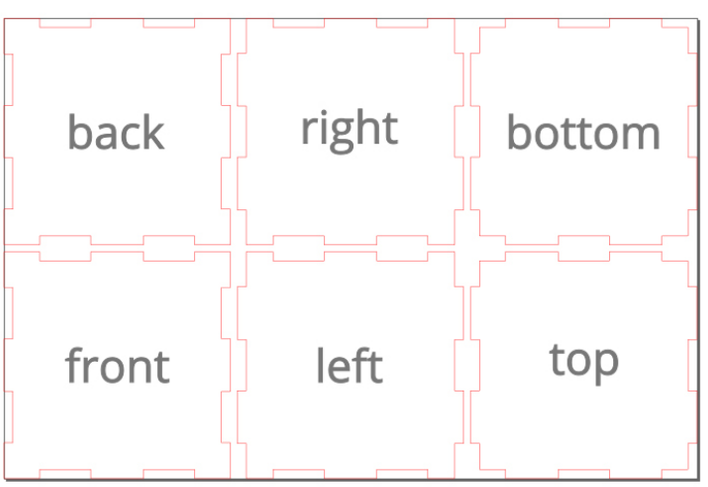


IMAGE OF THE DRAWING IN INKSCAPE

A simple way to make a box in the laser cutter

It's best to have already completed the first three laser projects before this one.

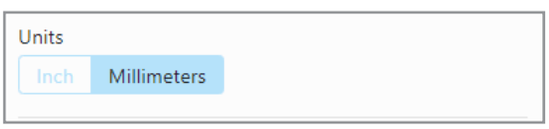
OPEN https://www.makercase.com/

Go step by step following the list of settings on the left.

SELECT BASIC BOX

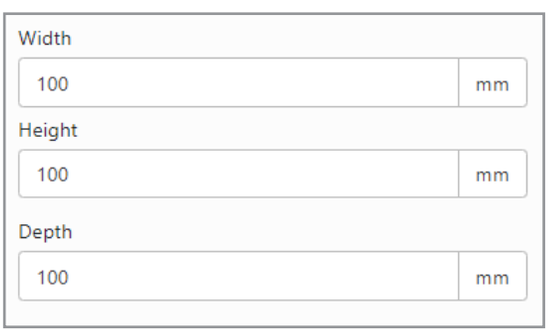
UNITS

Set it to millimeters.



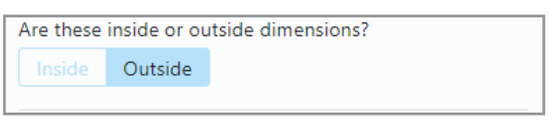
WIDTH, HEIGHT OG DEPTH

Set the width, height and depth you want your box to be.



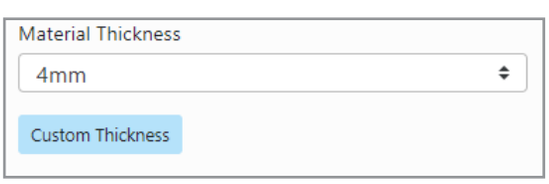
INSIDE OR OUTSIDE DIMENSIONS?

Select whether the size you set was the space inside the box or the outside dimensions.



MATERIAL THICKNESS

Keep in mind when selecting material thickness that here at Fab Lab Reykjavik the plexyglass is 3mm and the plywood 4mm thick. If you brought your own material make sure to check it's thickness. If the thickness of your material is not one of the options select Custom thickness and input the thickness into the window.



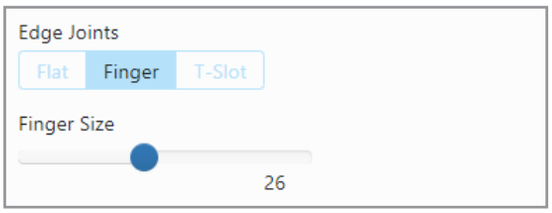
OPEN OR CLOSED BOX?

Select whether you want the box to be closed (6 sides) or open on one side (5 sides).

LÁTUM DRAUMANA RÆTAST

EDGE JOINTS

Here you select how the surfaces join together your options are:
-Flat, Flat sides you can glue together.
-Finger, Small fingers that slide and fit together.
-T-slot, Slots for fastening with nuts.



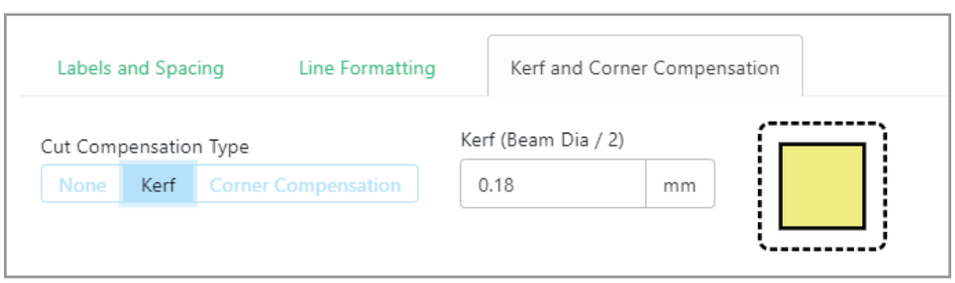
In this project we use fingers, You'll need to adjust the size of the fingers by dragging the blue dot below Finger Size
(The image updates to show your changes)

Download Box

When your settings are ready you can click Download Box Plans

The download window pops up.

- Select Kerf and Corner Compensation
- Press Kerf
- set it to 0.18



This helps the box fit together tightly.

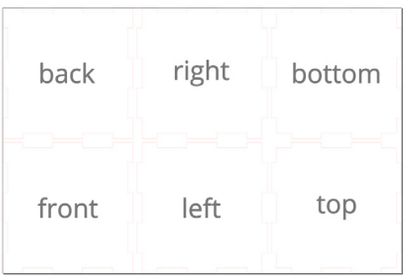
When all settings are complete select Download SVG

FROM HERE ON EVERYTHING IS DONE IN INKSCAPE

DELETING LETTERS

Select the letters and press Delete.

You can add images or decorate your box where the letters were.

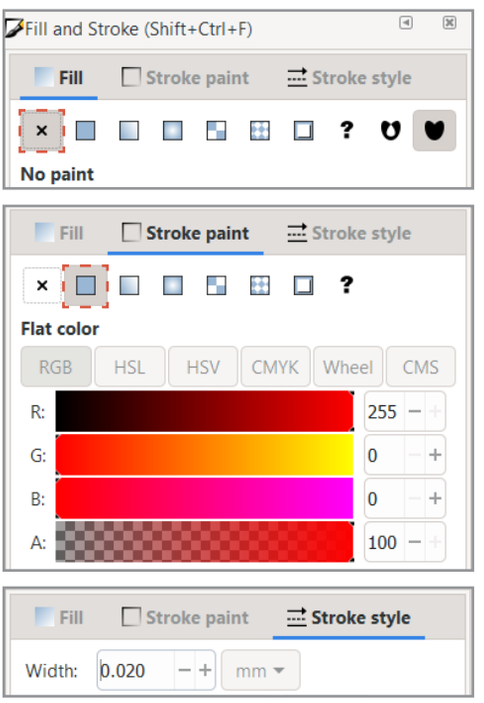


MAKING A CUTTING LINE

Cutting lines must be RED and 0.020 mm thick.

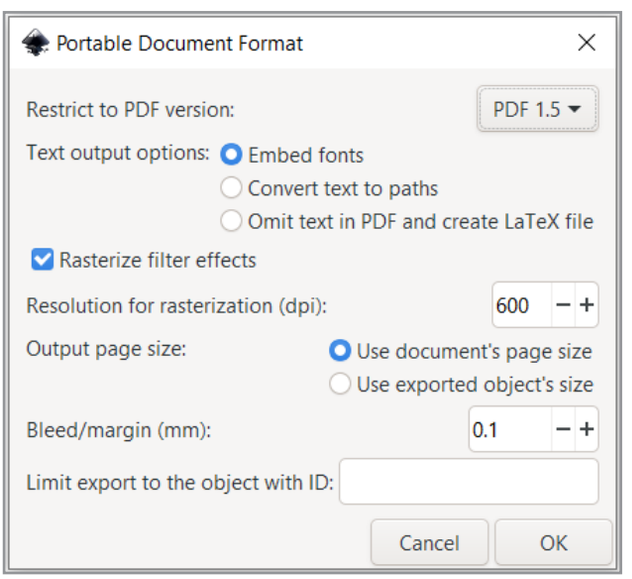
1. Select the image.
2. Go into **Object** and select Fill and Stroke.
3. Turn off Fill by clicking Fill and pressing ×
4. Go into Stroke paint and select Flat color and set Red to 255.
5. Go into Stroke style and set Width to 0.020 mm.

It might look like the squares have disappeared but if you zoom in you will see the lines are just very thin.



SAVING YOUR PROJECT

1. Go into **File** and select Save as.
2. Give your project a name.
3. Set Save as type as .pdf
4. Press Save.
5. The Portable Document Format Window will pop up and you set it like so:
6. Press OK.



SKAP
ANDI

Levels

Description of each level

The Inkscape instructions are designed to be concise in the earlier projects. The first projects contain fewer steps, But the complexity grows in later projects. In the later projects the instruction accuracy is reduced as the complexity increases.

About Vinylcutters
The vinylcutter in your school functions like a very accurate box cutter. It cuts following lines called “Vectors” The lines need to be the correct thickness and color so the vinylcutter follows them. The vinylcutter reads the image as a .pdf file, we use Inkscape to prepare it.

About Lasercutters
A lasercutter functions like a lightsaber. It cuts through materials but can also burn images onto their surface. It cuts following lines called “Vectors” The lines need to be the correct width and color for the laser to cut them. The lasercutter reads the image from a .pdf file but we use Inkscape to prepare it.

Level 0

- Being familiar with saving an image and removing it’s background in another program.

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Level 1

Level uses the same instructions in Inkscape, The instructions are precise and accurate in each step.
These are the projects:

- Vinylcutter sticker
- Vinylcutter textiles
- Lasercutter coaster
- Lasercutter key chain

Instructions: **Shortcut**

Images
- Show how to use a reusable image with author's permission

Setting the page and units **Shift+Ctrl+D**
- Use Document Properties

Inserting an image **Ctrl+I**
- Here we show you how to insert an image using file and import
  Although usually it's enough to drag an image file directly into Inkscape

Convert an image to a vector **Shift+Alt+B**
- Trace bitmap

Setting shape size
- Locking the proportions of a shape and stretching or rotating it

Drawing shapes **Square F4 and Circle F5**
- Draw squares and circles

Adding text **F8**
- Use the A symbol and select a font

Mirroring text **H**
- Important for pressing vinyl onto textiles

Vector settings **Shift+Ctrl+F**
- Rule of thumb is the cutting line should be red and 0.020 mm

Adjusting rasterization **Shift+Ctrl+F**
- Show how to color an object with the palette and Fill and stroke

Saving
- Save as .pdf

Level 2

In level 2 we use the same instructions as in level 1 but the instructions are not as precise. A few shortcuts are added which are listed here below.
These are the projects:

- Vinylcutter Stencil
- Vinylcutter Reflective
- Lasercutter Slide fit
- Lasercutter Christmas Tree

Instructions:	**Shortcut**
Measuring material • Use hand measurement tools	
Rotating a shape • Doubleclick shape and drag arrows	
Arranging • Align and distribute	**Shift+Ctrl+A**
Using nodes • Deleting nodes	
Layers • Moving shapes up or down	**Home, Pg up, Pg dn og End**
Combining shapes • Path – Union	**Ctrl++**
Cutting overlapping shapes • Path – Difference	**Ctrl+-**
Creating a workspace around an image • Resize page to drawing or selection	**Ctrl+Shift+R**

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Level 3

In Level 3 we use the same instructions as in level 1 and 2, but the instructions are not as precise. A few shortcuts are added which are listed here below.
These are the projects:

- Vinylcutter Birthday Balloon
- Vínylskeri Multicolor sticker
- Lasercutter Pumpkin
- Lasercutter Slicer

Instructions:	**Shortcut**
Drawing freehand • Use the pencil tool	**Ctrl+F6**
Warping text • Put on Path	
Breaking apart an image • Break apart	**Shift+Ctrl+K**
Manipulating nodes • Moving and adding nodes	
Using the star • Adding a triangle	*
Turning a shape into a Path • Object to Path	**Shift+Ctrl+C**
Importing vectors from another program • From Slicer to Inkscape	

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