Inkscape Guide

Follow these guidance notes to complete a drawing file using the CAD (Computer Aided Design) programme Inkscape, files can then be used by the laser cutter to cut a profile from acrylic plastic. To save your files, make a new folder called Inkscape Drawings, save your drawings with a title you can easily recognise, good idea to include a date (moodlight 18.9.17)

First, download Inkscape, if you are using a chrome book you will need to use an app to access Inkscape (try the boxy app)

Page setup:
- Open a new inscape drawing – <u>file</u> – <u>new</u> – enter – you will see a blank A4 outline on the screen
- Set the screen size to the laser cutter bed size which is 650mm x 450mm
- <u>File</u> – <u>document properties</u> – click on the <u>units</u> box, chose the <u>mm</u> unit
- Click inside the <u>width</u> box, enter 625, click in the <u>height</u> box, enter 450. This is the size of the laser cutter bed, centre the outline on the page by using the side and bottom bars.
- Change the <u>units</u> box to <u>mm</u> (millimetres) it may show <u>px</u> which is pixels, you can see the size of the selected object in the W (width) and H (height) boxes

Inkscape tools:
- The tool bar at the side of the page contains all of the drawing tools used in Inkscape, by selecting these tool icons you are able to draw virtually any shape. The main tools you will need to begin with are;
  - Select - use this to make a shape active, then it can be moved, resized, deleted, grouped or copied, a shape needs to be active in order for it to be worked with.
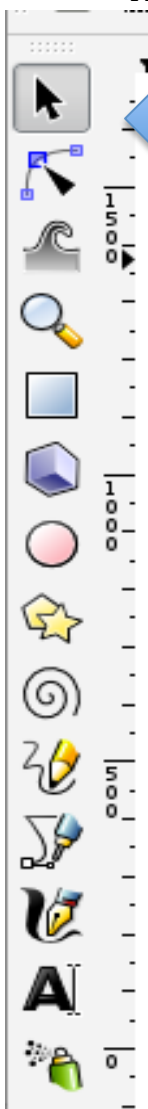
  - <u>Rectangle</u> – draw any 4 sided shape
  - <u>Circle</u> – circle or elliptical shape
  - <u>Stars and polygons</u> – any shape with points or multi sides

Select a shape by clicking on the shape in the left toolbar
- to change the size of a shape first select it using the select tool (arrow)
- in the top toolbar, change the units to mm
- Enter the width W and height H of the shape in the boxes
- For a circle, the width and height must be the same size
- For a star or polygon you can enter the number of points or sides by entering these in the units box

Along the top toolbar there are some very useful tools you will need, these are (left to right) <u>zoom</u>, <u>duplicate</u> and <u>group/ungroup</u> then <u>T</u> text for adding and editing text.

Explanation of Inkcape and laser cutting
- The laser can be set to cut through acrylic plastic and engrave the surface; you do this by changing the settings of the laser beam
- Files are in the format of svg (Scaleable Vector Graphics) the laser can only read files of this type so you need to know how to import files and convert them to an svg format

Importing an image or shape into Inkscape

An image or picture can be imported into inkscape but must be converted before it can be used, the image must be converted to a BITMAP format so the laser can detect the outline
Importing and bitmap conversion:

- Find an image by using google to search an image (try Batman to start)
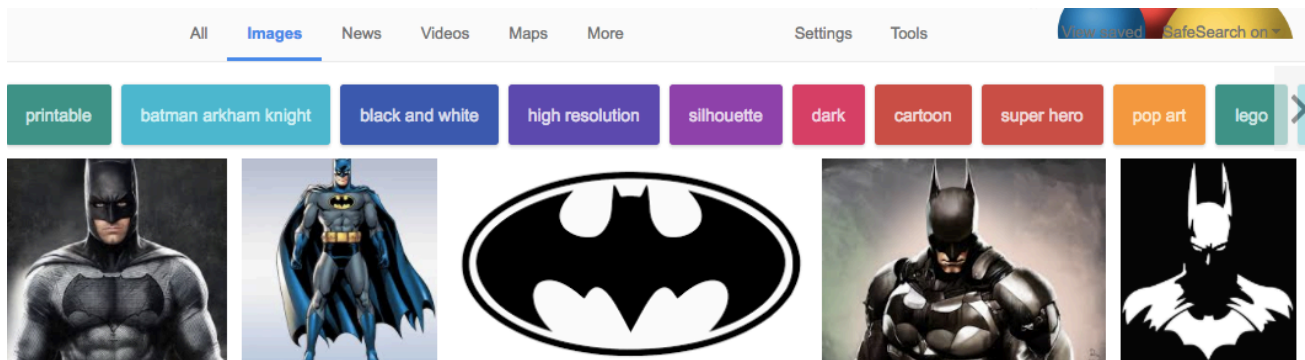
click on <u>tools</u> then select <u>line drawing.</u> Some images are not suitable for laser cutting, by selecting line drawings you can usually chose an image that is OK for laser cutting.
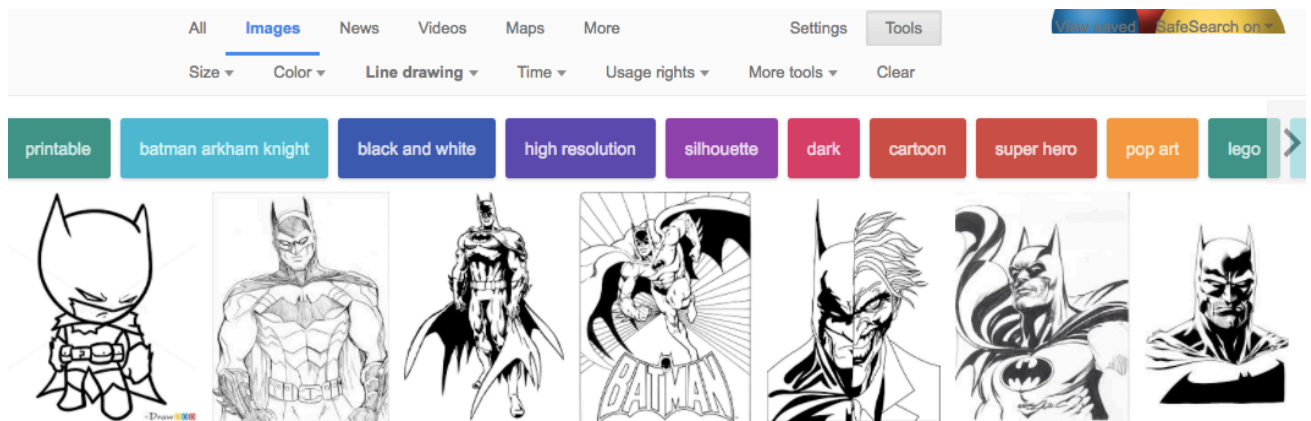
- Copy the image and paste it into the inkscape drawing area. The laser needs to define the outline of the image to either cut or engrave so we need to separate the solid shape from the outline
- Select the shape using the <u>select</u> tool
- On the top toolbar, click on <u>path</u>
- On the drop down menu click on <u>trace bitmap</u>
- Click on the <u>edge detection</u> box
- Click on <u>update</u> then <u>OK</u>, the outline of the shape will appear in the drawing box, see the screenshot below. If the outline does not appear then the image is not suitable.
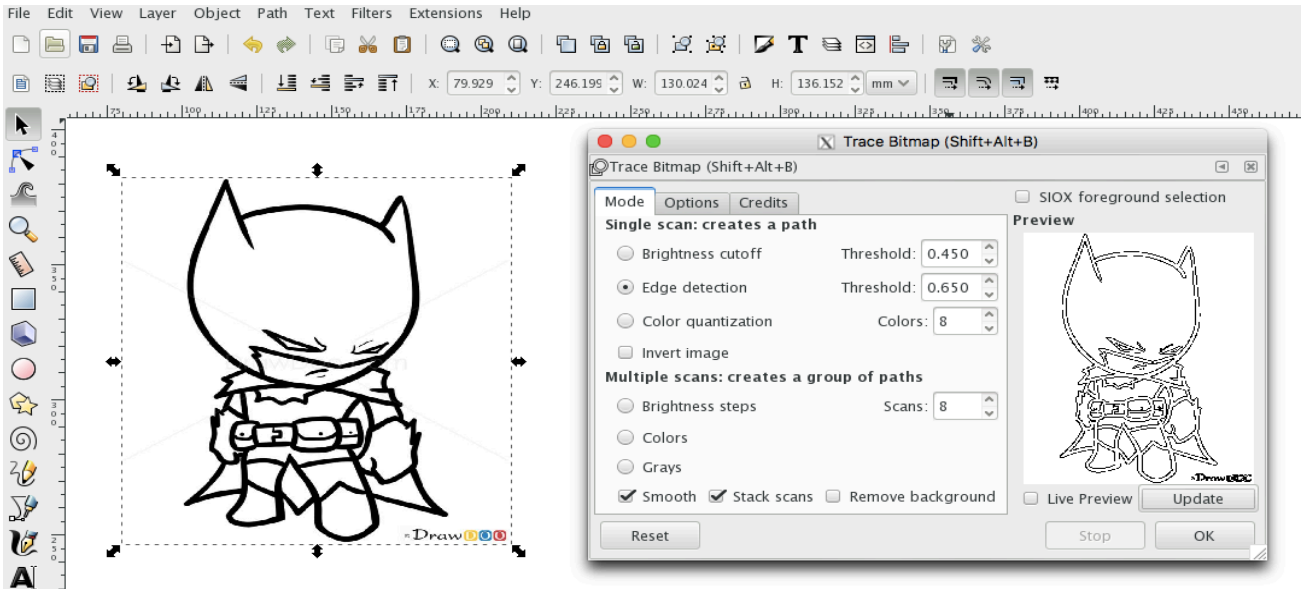
If you did select an image that is not a line drawing the next step is to delete the solid shape of the image so you can reveal the outline of the image
- <u>Select</u> the imported shape
- Click on the shape and drag it away from the outline which you will now see
- Delete the solid shape to leave only the outline

Setting up the image for laser cutting:
You now have an image to laser cut, the next step is to set up for laser cutting
- Select the image using the <u>select</u> tool
- Click on the <u>object</u> toolbar
- Click on <u>fill</u> – click on the <u>X</u>
- Click on <u>fill/stroke</u> – click on the <u>shaded box</u> next to the X, a coloured slider box will appear, it should be on RGB
- **For laser cutting – slide to far right side = RED**
- **For laser engraving – slide to far left side = black**
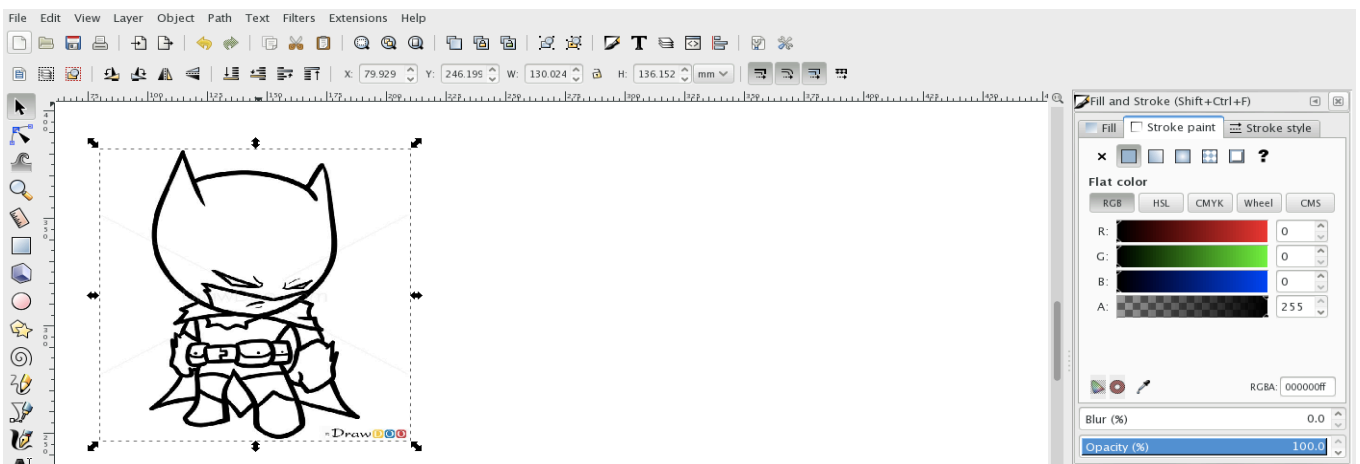
After you have selected cutting/engraving click on the stroke/style icon
- Select units and set to mm
- Set width to 0.020

Grouping objects:

Some objects may consist of two parts, a central image and an outer profile/shape while others may include text as well as multiple parts. Objects must be grouped in order to be moved/cut/copied/attached to an email. If individual parts need to be edited then they must be ungrouped, to group and ungroup objects:

- Select a part of the object
- Hold down the shift key
- Select the remaining objects (as objects are selected they will be highlighted by a selection box)
- When all are selected – click on the group icon
- To ungroup, select a grouped object then click on the ungroup icon (individual parts will show as selected items)
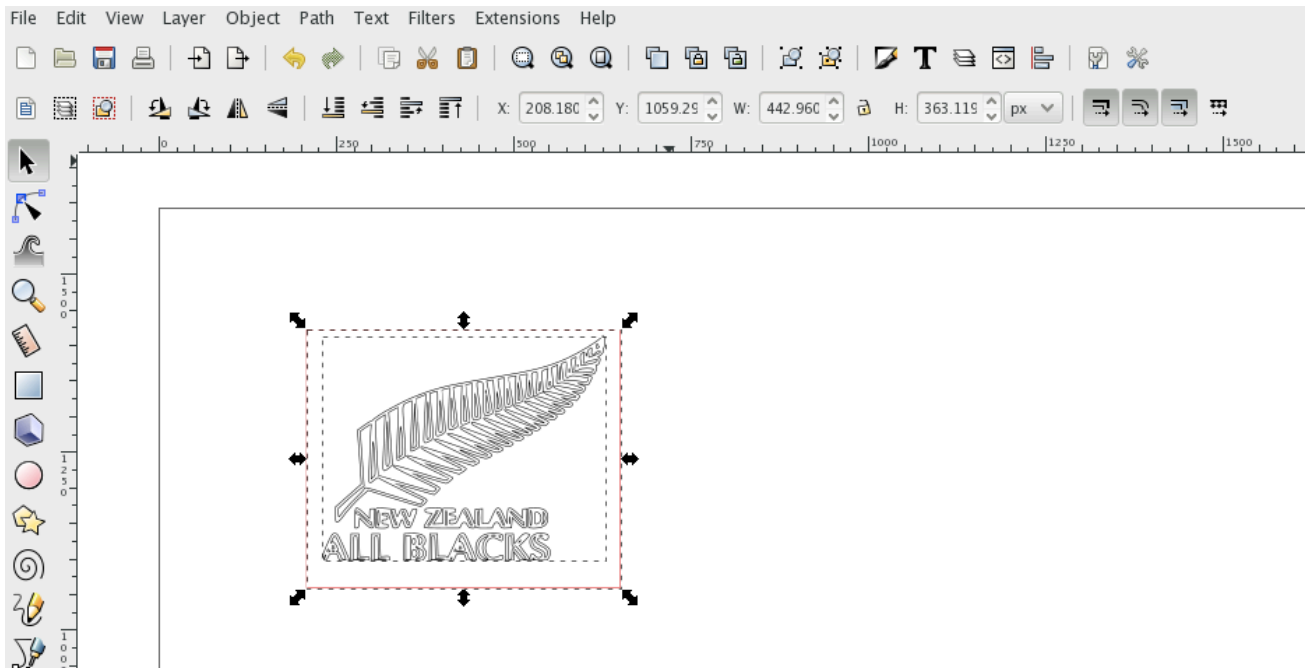

To align objects

When you have created a drawing from different parts may want to align them together, to do this:
- Select the parts to be aligned (use select and shift key)
- Click on the align icon on the top toolbar (shows three horizontal bars, above the units box)
- Use the align icons, click on where you want to align
- The selected objects should 'jump' to where you have aligned them

The screenshot below shows the options for aligning object
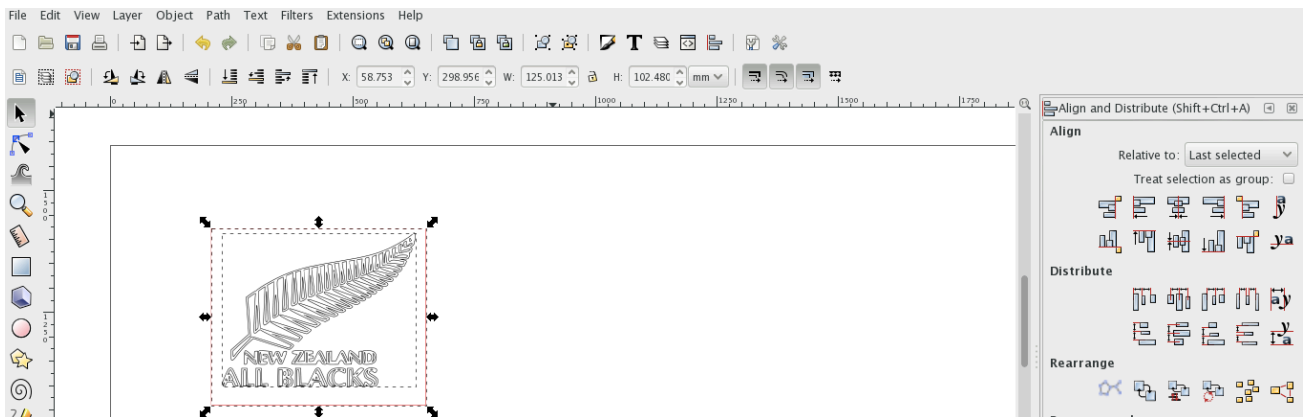
To send a file for laser cutting:
When a file has been checked it needs to be sent to the laser cutter. The laser cutter has its own dedicated computer, all files need to be setup through this computer.

- Save the file using a clear name - example (batman1 18.9.17)
- Open gmail – compose
- Enter the destination email address (you will be told this)
- In the subject line enter the file name as well as your ID – example (John Smith 8F1 batman 18.9)
- Attach the file to the email and send.

Files that are sent without an ID/name will not be processed