Design out the box

Time 40-50 mins approx

Level of difficulty ★★☆☆☆

- CAD stands for **C**omputer **A**ided **D**esign.

- It is the use of computer technology to aid in the design of something.

- CAD can create 2D and 3D virtual models of goods and products.

Lesson Objectives…

- To understand the basic tools used in 2D Design.
- To understand the advantages of using CAD
- To be able to successfully use CAD independently to complete a range of tutorials in 2D and then in 3D
- To develop advanced skills and problem solving skills when using 2D Design

Skills to be used in this project…

Basic Skills	New and Higher Skills
Zoom tool	Rotate tool
Orbit tool	Move tool
Pan tool	Offset tool
Line tool	Arc tool
Rectangle tool	Text tool
Circle tool	Paint Bucket tool
Eraser tool	Bitmap tool
Delete part tool	Making Components

Basic skills are those required to do very basic drawings and are detailed as part of this presentation.

New and higher skills may be new to the novice and are the focus for learning in this presentation.

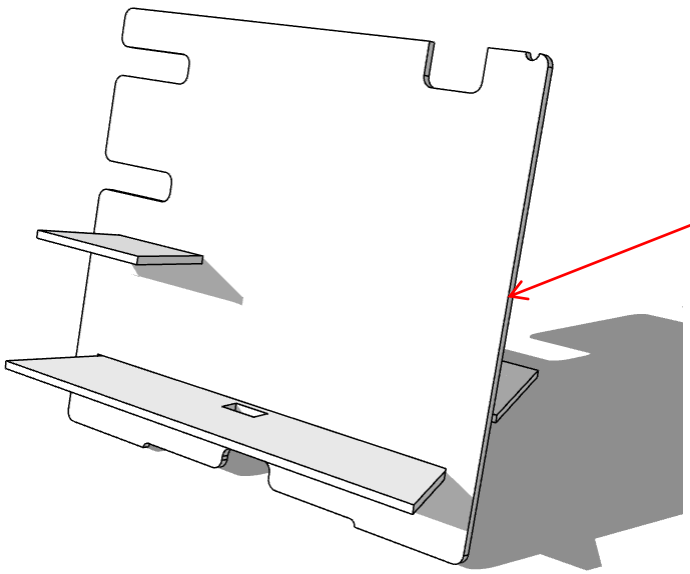
Skills to be used in this project…

Basic Skills	New and Higher Skills
Zoom tool	Construction lines and points
Orbit tool	Tape Measure tool
Pan tool	Arc tool
Line tool	Contour Tool
Rectangle tool	Bitmap Tool
Circle tool	Paint Bucket tool
Eraser tool	
Delete Part tool	

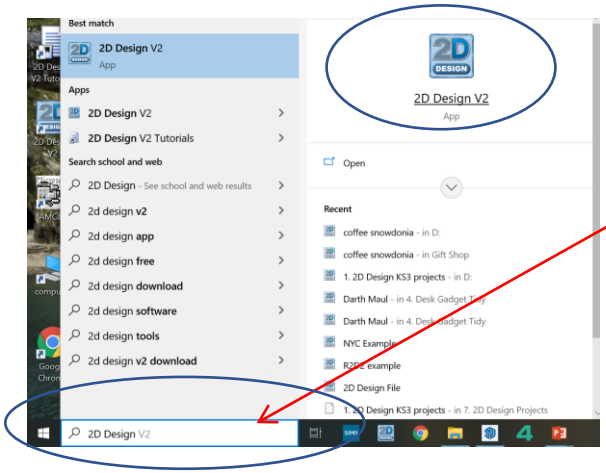
Basic skills are those required to do very basic drawings and are detailed as part of this presentation.

New and higher skills may be new to the novice and are the focus for learning in this presentation.

2D Design Desk Tidy

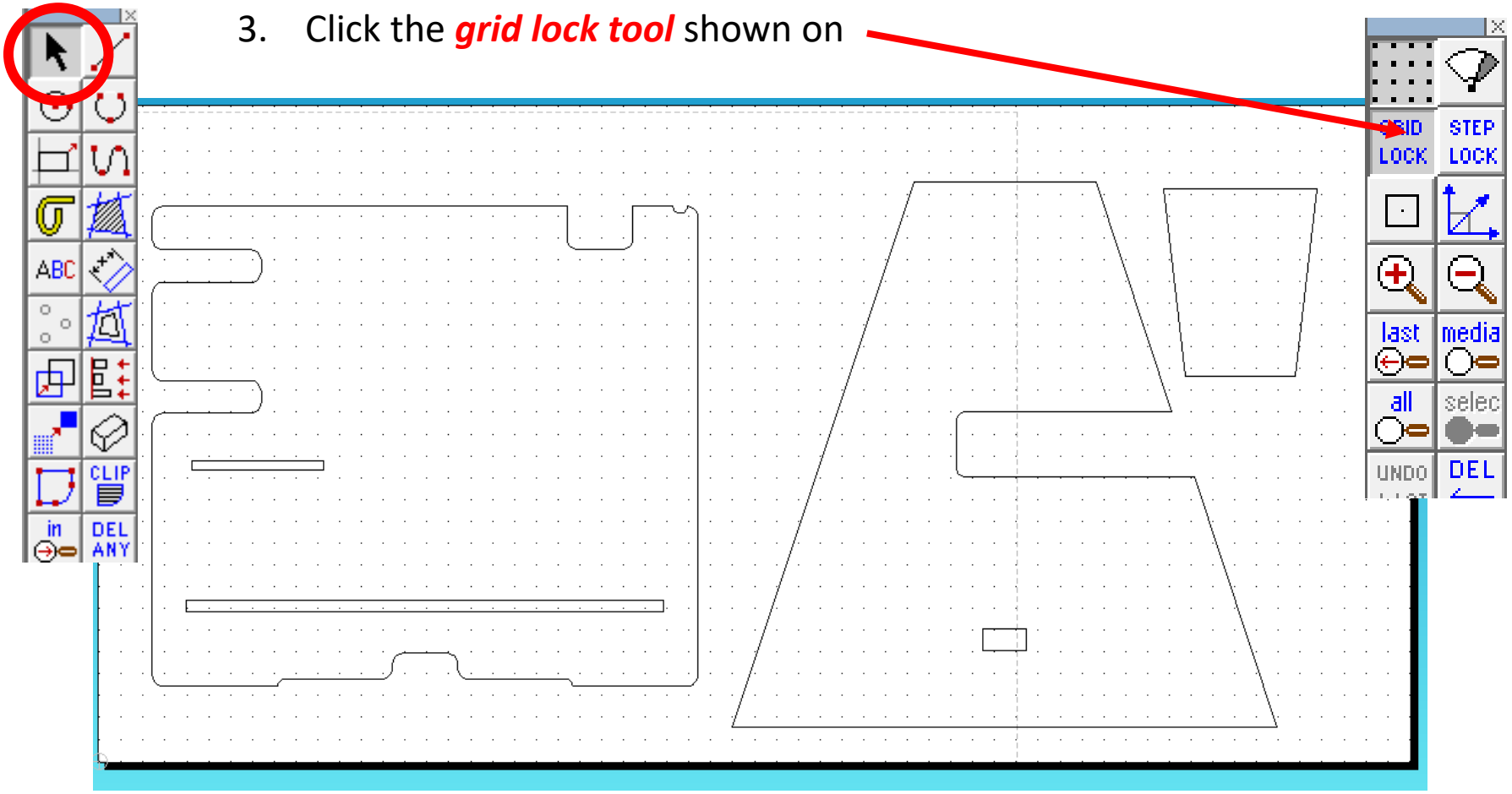


1. In ***Sketch up*** you have been using ***3D*** CAD to draw a desk tidy shown opposite. We are now going to use a ***2D*** piece of software to draw a design on it. First we need to learn the basics of 2D design….

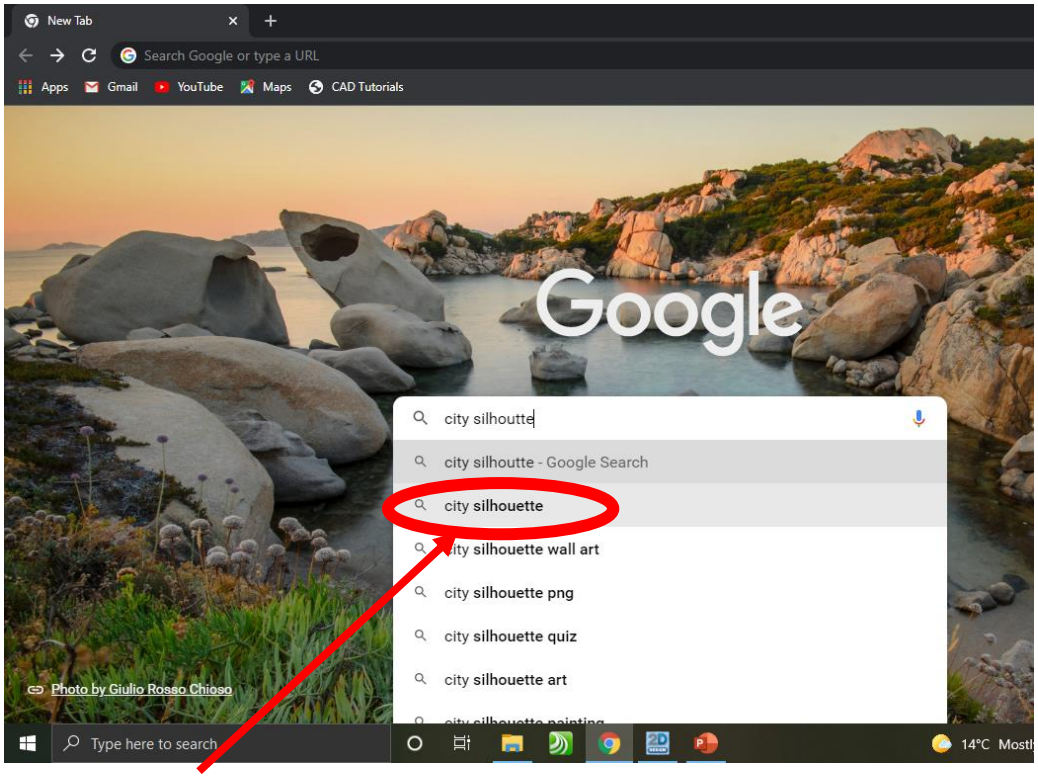


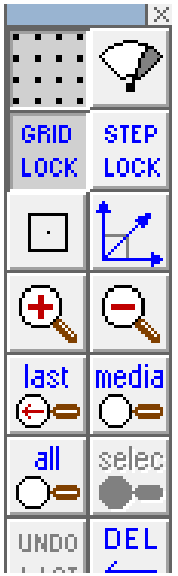
2. Click ***Start*** and then use the search bar to search for 2D design

3. Click the ***grid lock tool*** shown on

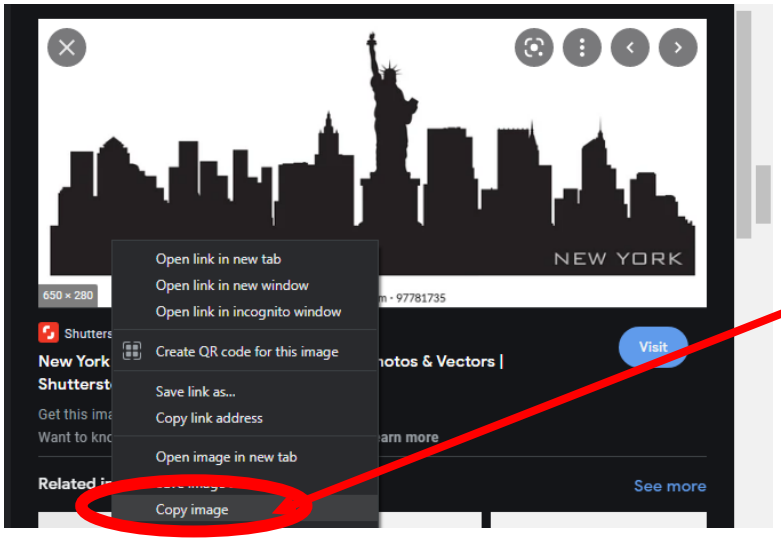


4. You will notice the bed size is bigger. It measures ***300mm x 600mm*** the size of the laser cutter bed.

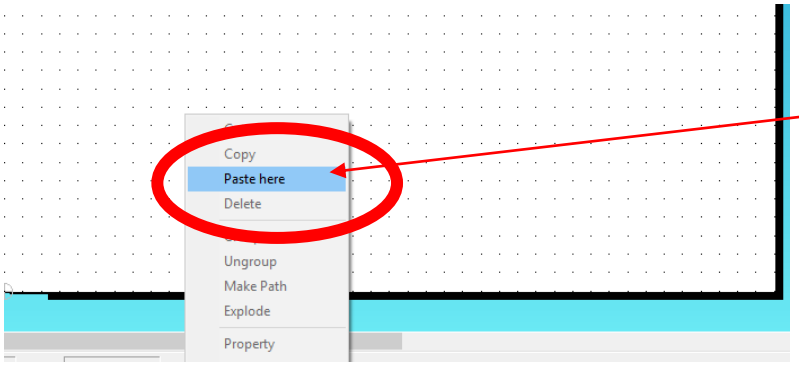




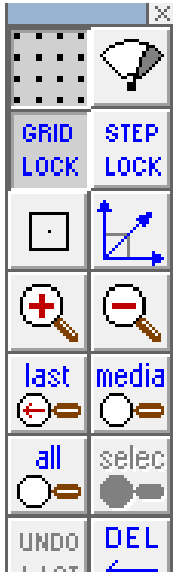
5. Search for a ***city silhouette*** images on the internet. Use NYC, London, Paris etc.

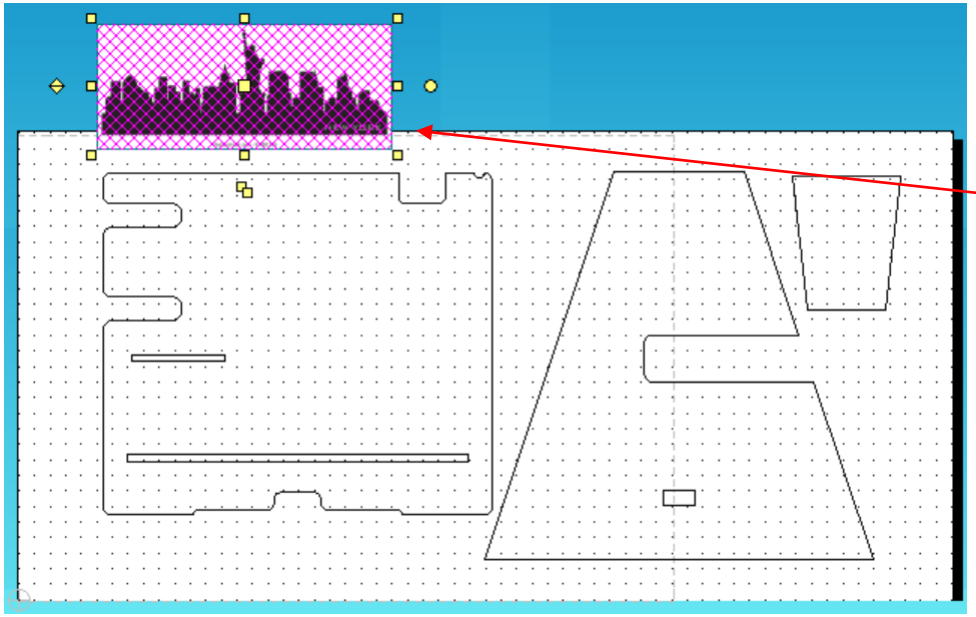


6. Once you have found a ***city silhouette.*** ***Right click*** on the mouse and ***copy*** the image

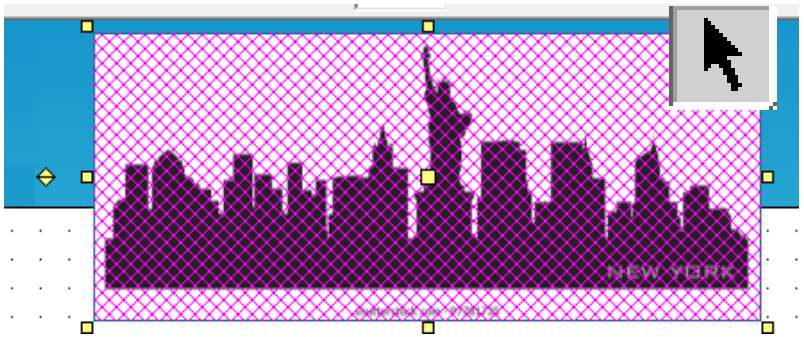


7. Go back to 2D design and ***right click*** on the mouse and click ***paste here.***

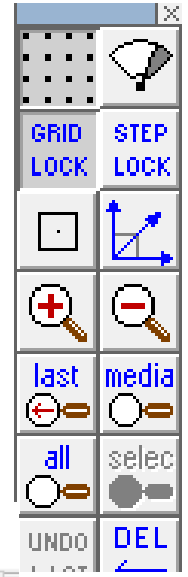




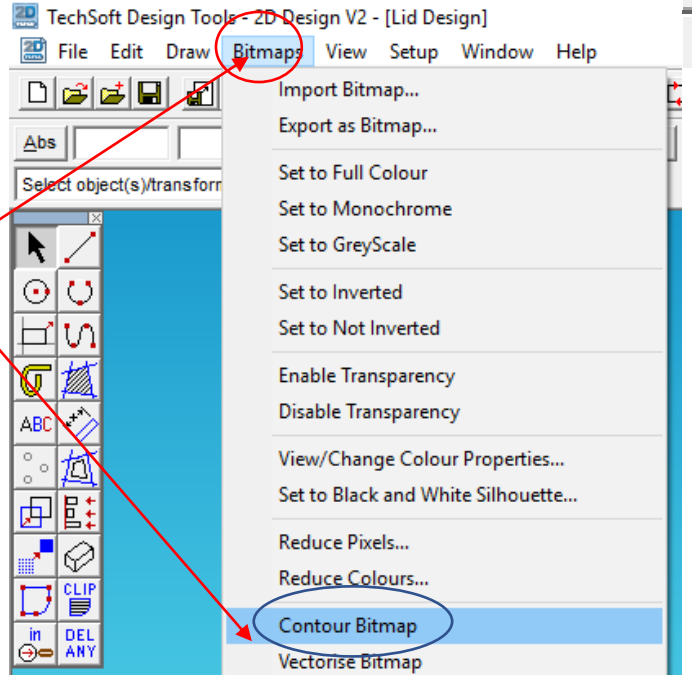
8. ***Position*** the image above the desk tidy for now and size it so it fits across the top…..

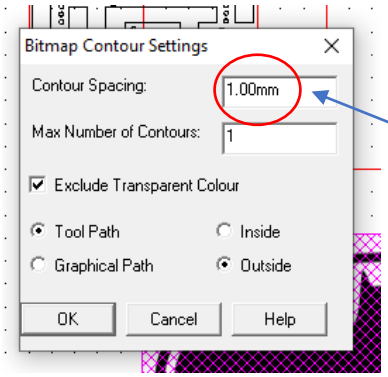


9. Using the ***select tool, highlight*** the ***entire drawing by clicking on it***.

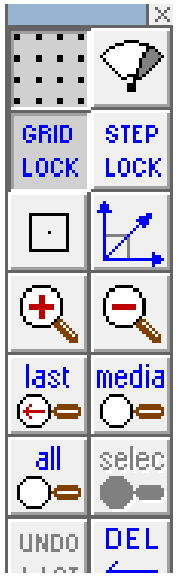


10. Select the ***Bitmaps toolbar, at the top of the screen*** and scroll down until you come to ***Contour Bitmap and click on it***.

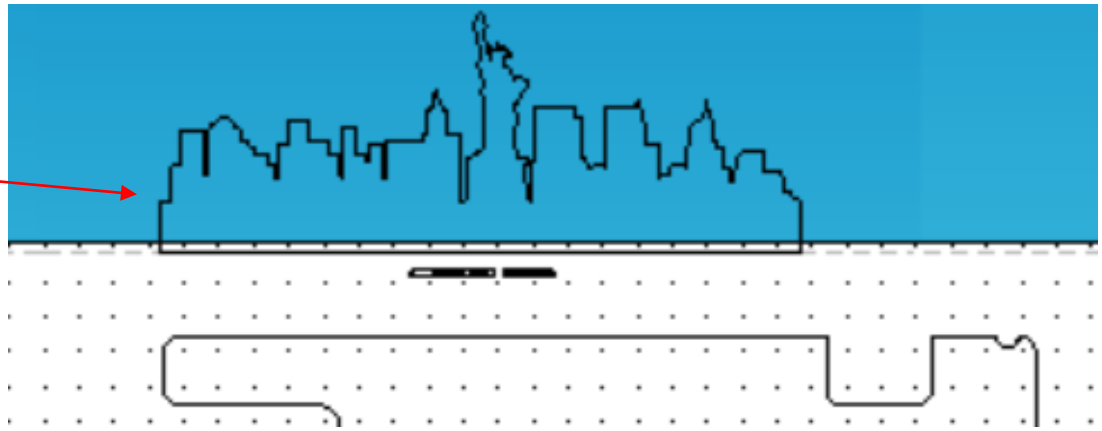


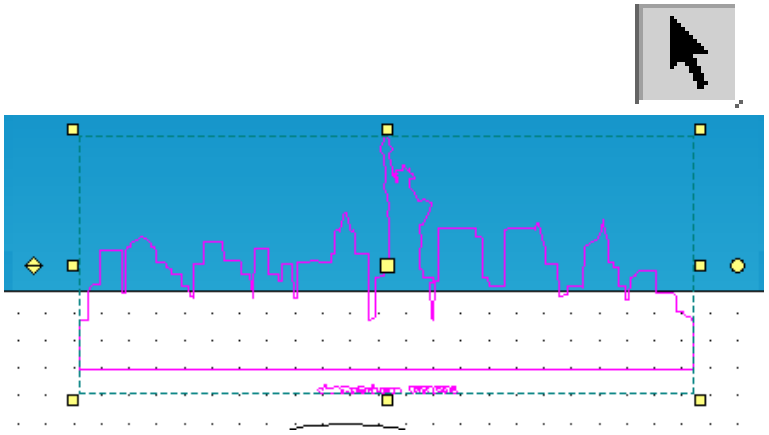


11. A Bitmap contour spacing pop up will appear. This basically traces the image. ***Change the contour*** from 5.00mm to ***0.00mm***.

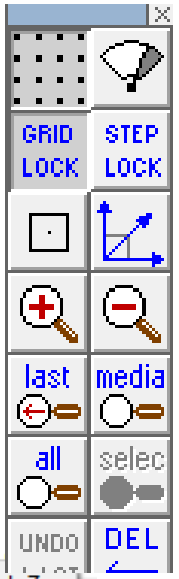


12. A contour or line should appear around your drawing. You need to click and delete the image to see if its worked. You should be left with a line drawing as shown

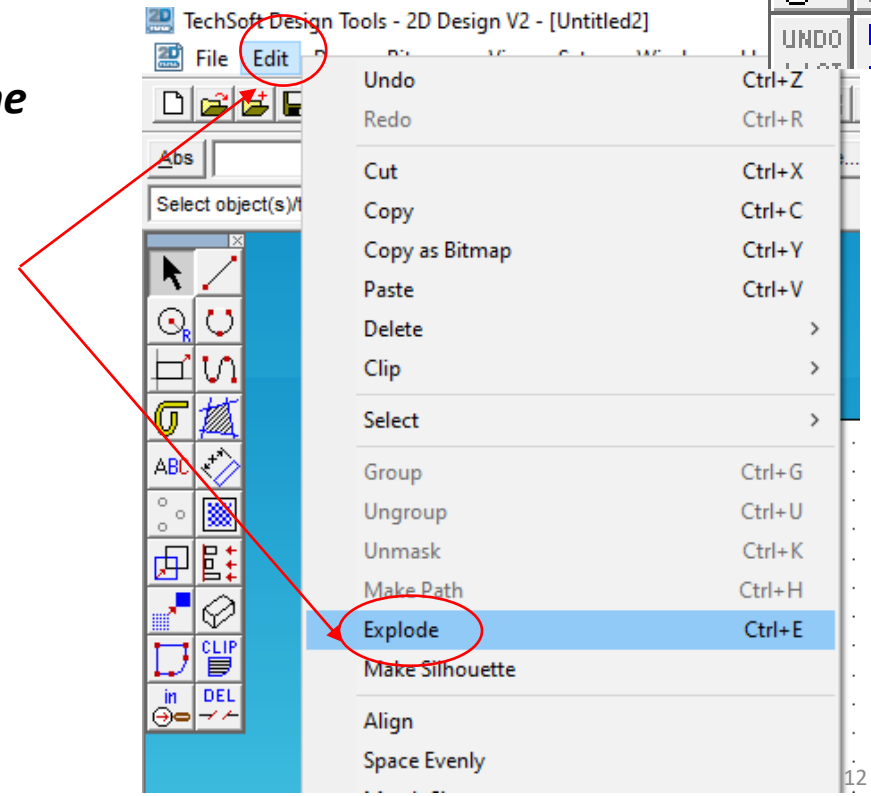


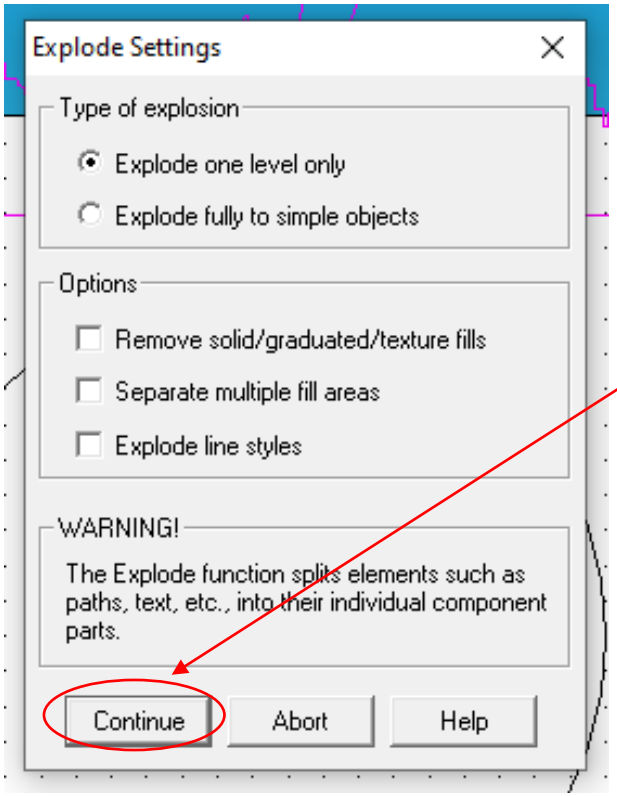


13. Using the ***select tool, highlight*** the ***entire drawing by clicking on it***.

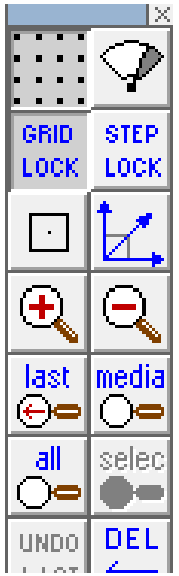


14. Select the ***edit toolbar, at the top of the screen*** and scroll down until you come to ***explode.***

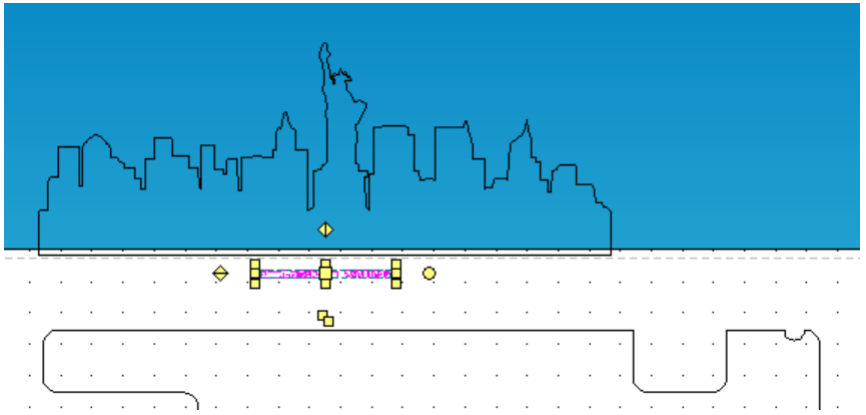


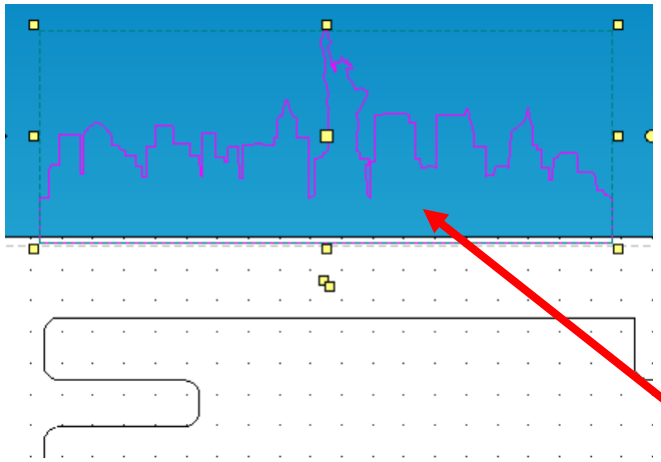


15. Select the ***continue.***

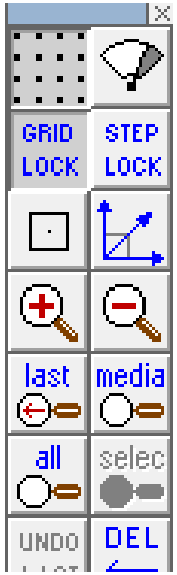


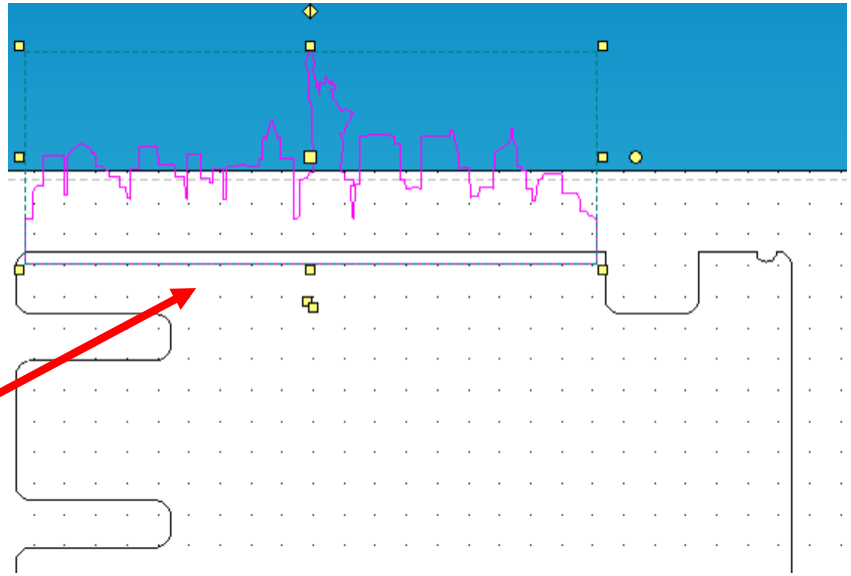
16. Using the ***Select tool*** ***highlight*** any writing that you don't want and **delete** them**.**



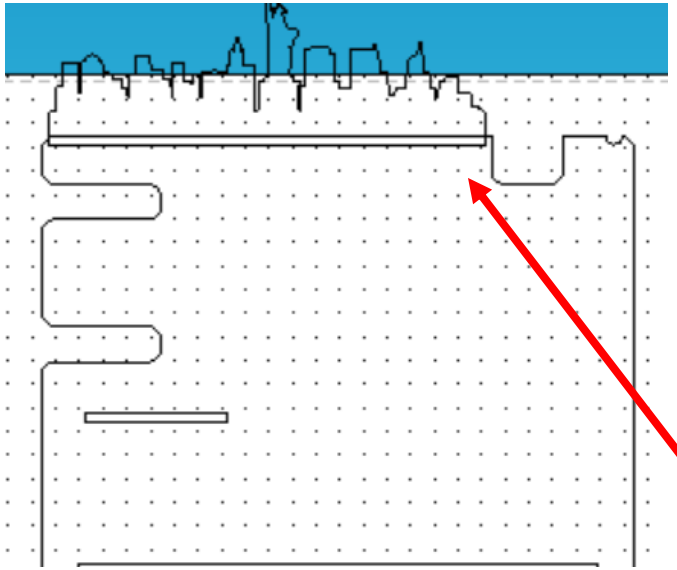


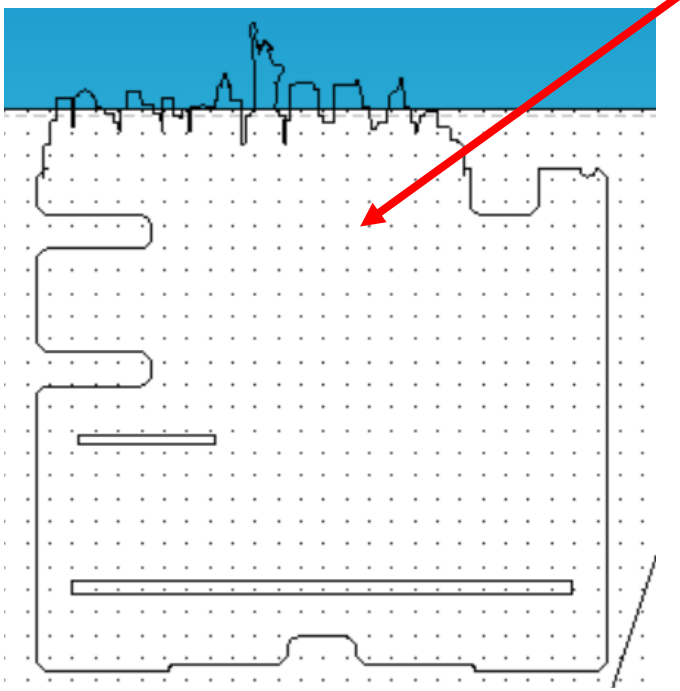
17. Using the ***Select tool*** ***highlight*** the city.



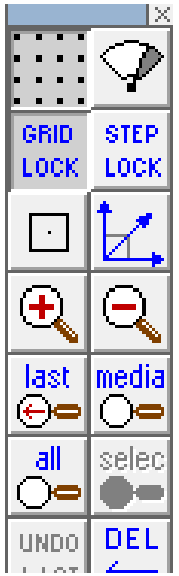


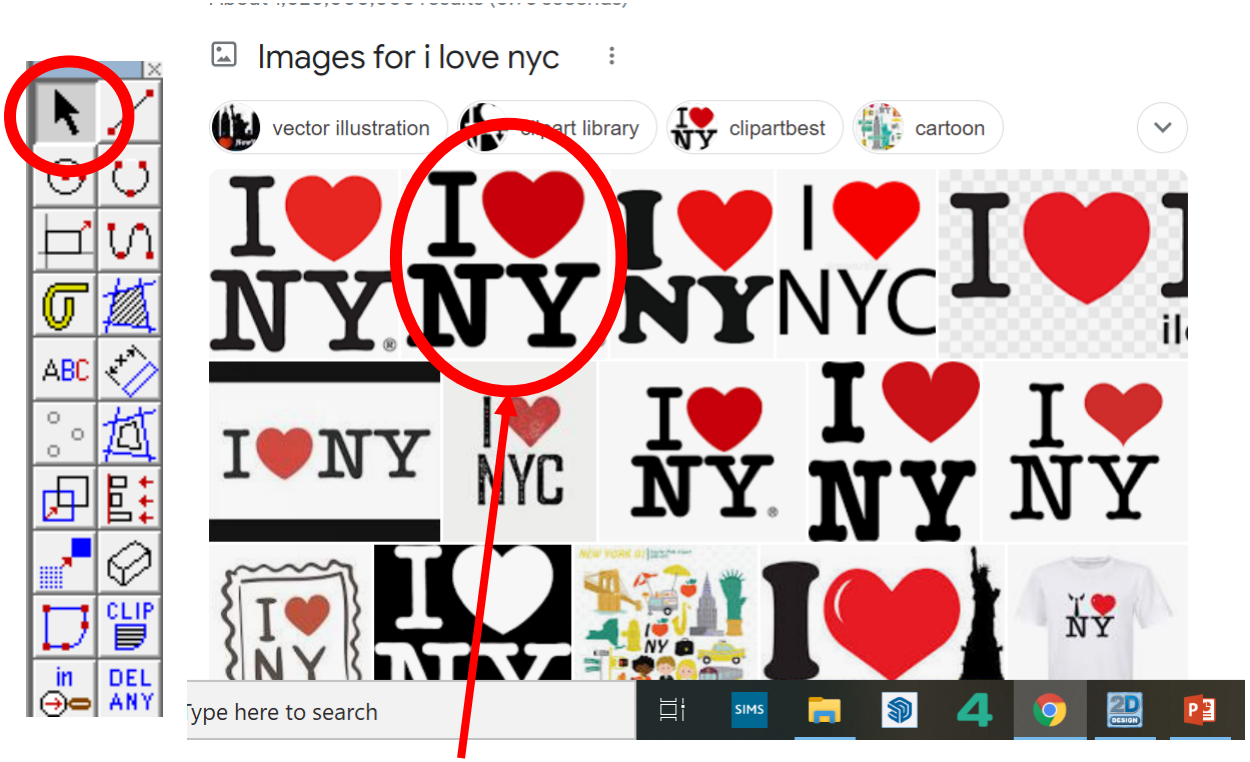
18. Using the ***Select tool*** ***move*** the city onto the ***top of the desk tidy.*** You may want to untick ***grid lock***. Ensure the bottom line intersects (crosses over)



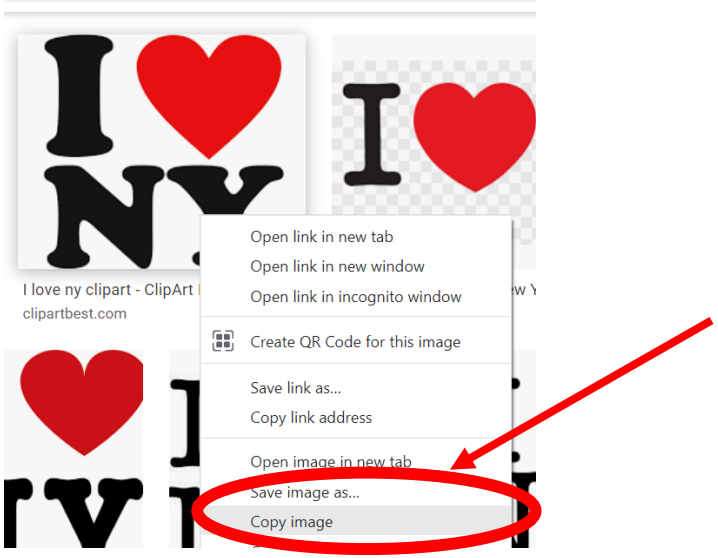


19. Using the ***delete part tool*** and ***delete*** the line separating the top and bottom of the clock to join the two parts together as shown.

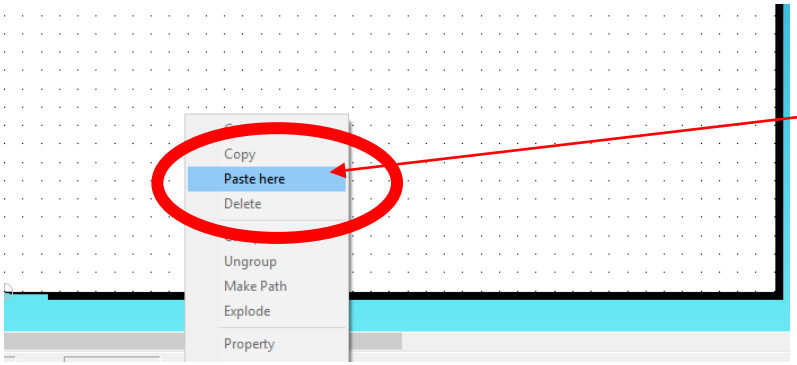




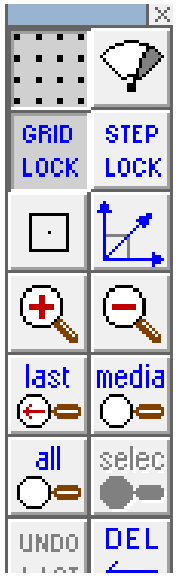
20. Search for a ***I Love NYC*** images on the internet.

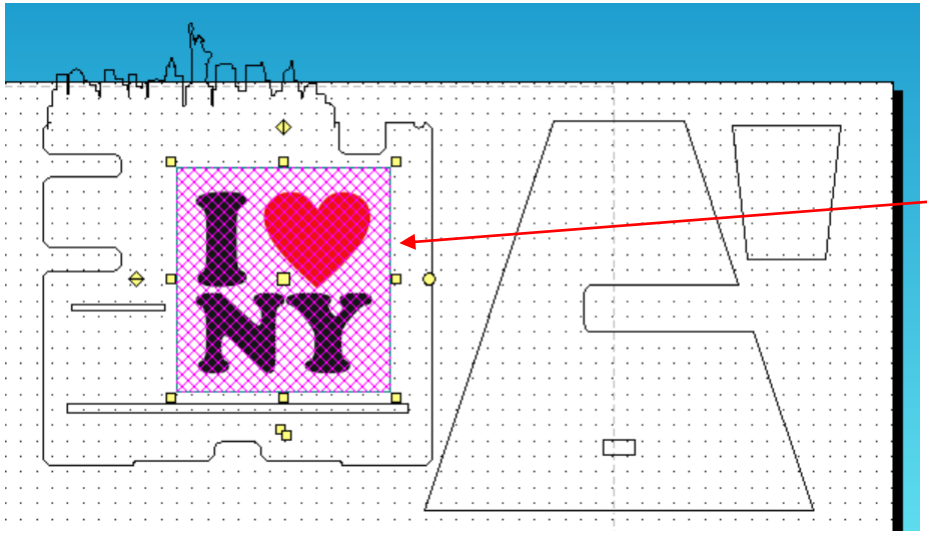


21. Once you have found a ***image. Right click*** on the mouse and ***copy*** the image

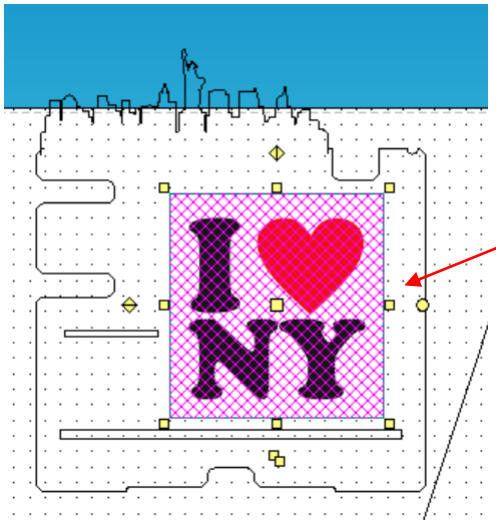


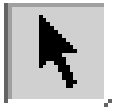
22. Go back to 2D design and ***right click*** on the mouse and click ***paste here.***



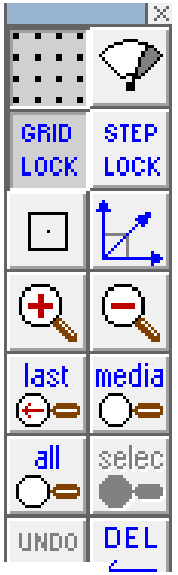


23. ***Position*** the image on the desk tidy for now and size it so it fits in the middle…..

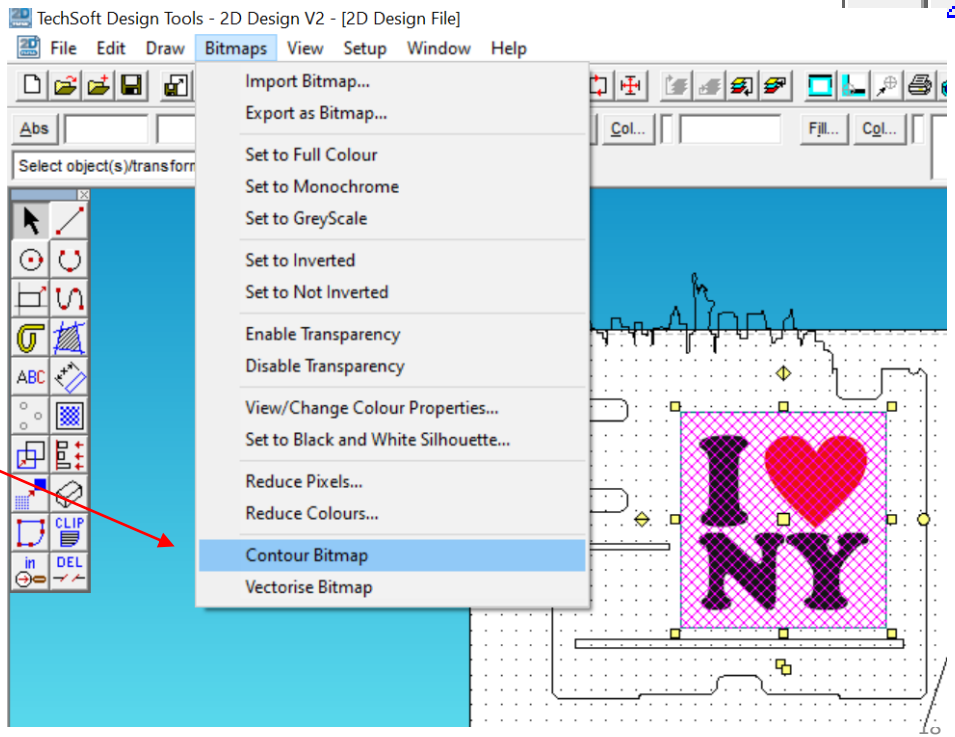


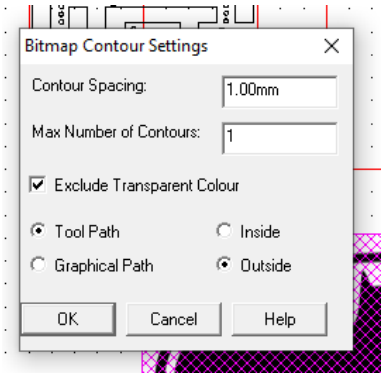


24. Using the ***select tool, highlight*** the ***entire drawing by clicking on it***.

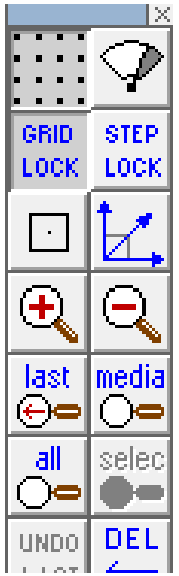


25. Select the ***Bitmaps toolbar, at the top of the screen*** and scroll down until you come to ***Contour Bitmap and click on it***.

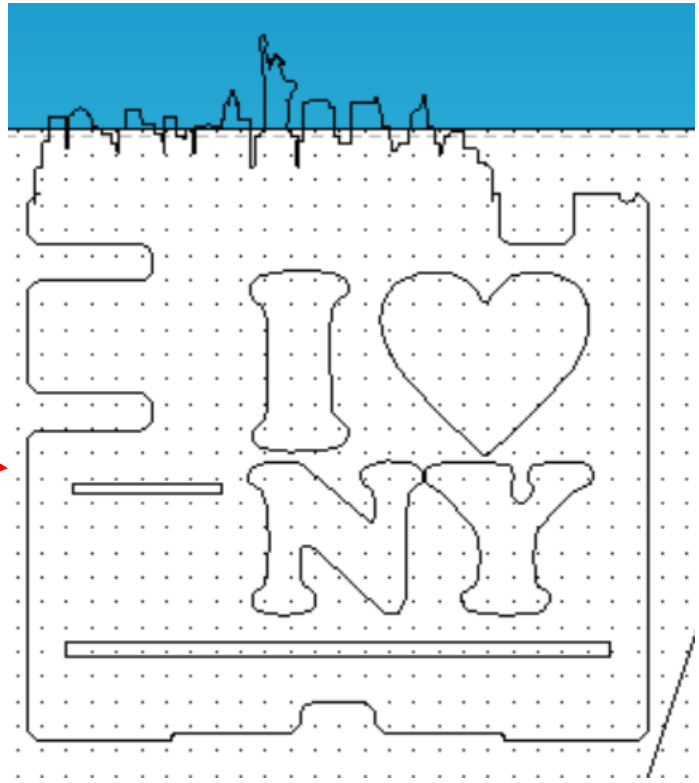




26. A Bitmap contour spacing pop up will appear. This basically traces the image. ***Change the contour*** from 5.00mm to ***0.00mm***.



27. A contour or line should appear around your drawing. You need to click and delete the image to see if its worked. You should be left with a line drawing as shown



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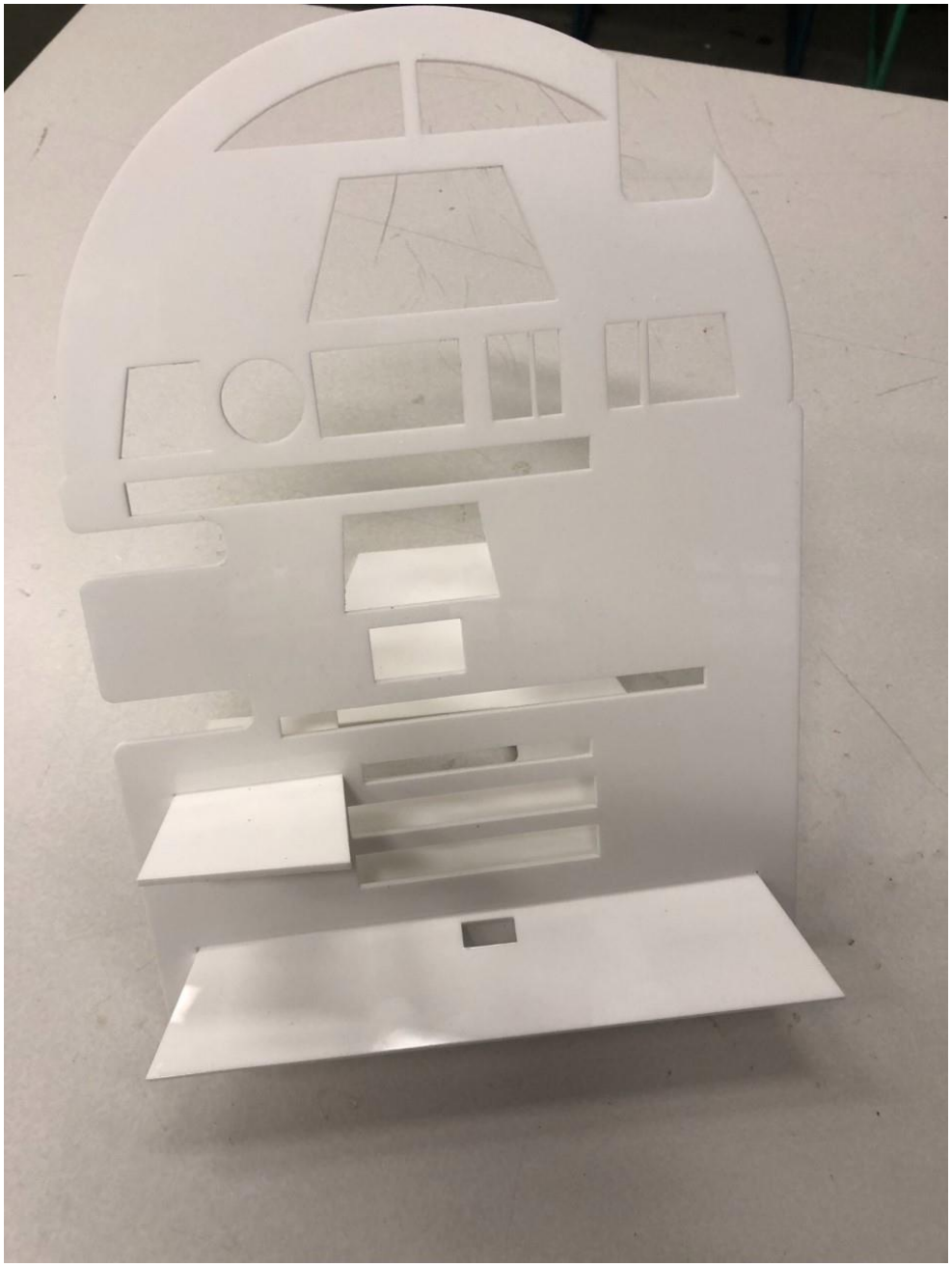
28. Using the template you have drawn add your own theme to your desk-phone-watch holder.