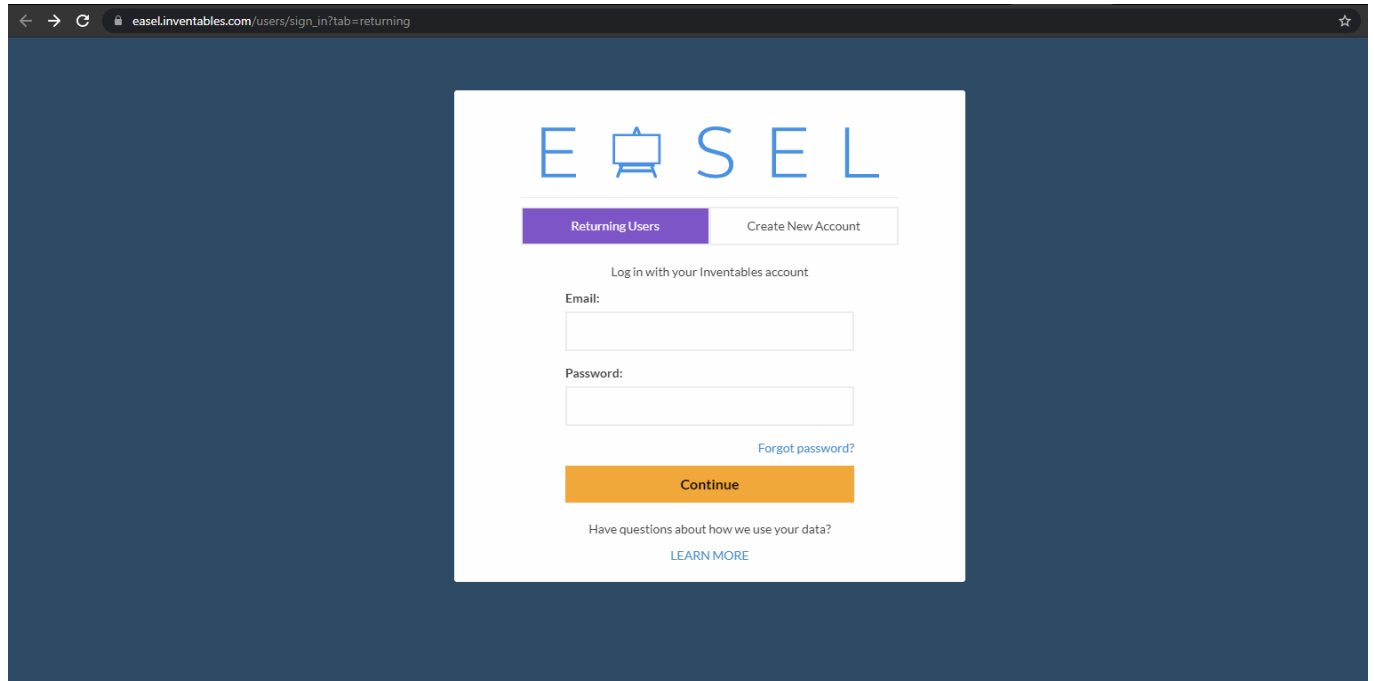


How to Make a Star Design with Text Using Easel Software and the Carvey

Signing Into Easel or Creating an Easel Account

1. Open a web browser of your choice. Google Chrome or Mozilla Firefox are recommended.
2. Enter https://easel.inventables.com/users/sign_in?tab=returning into the search or address bar.

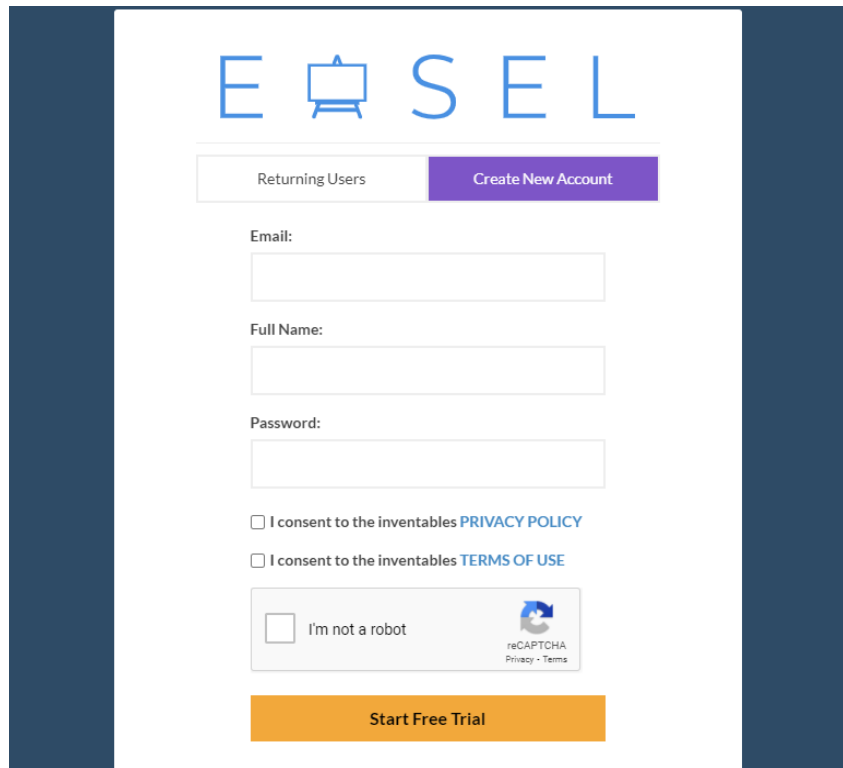


3. Signing into Easel: If you already have an account with Easel follow the steps in part a. If you have not already created an Easel account, skip part a and follow the steps in part b.
 - a. Signing into Easel while already having an account:
 - i. Select the "Returning Users" tab.
 - ii. Enter your Easel email and password.
 - iii. Click "Continue".
 - iv. If you have forgotten your password:
 1. Click on "Forgot Password?" and enter your email once again.
 2. Check your inbox for an email that allows you to reset your password.

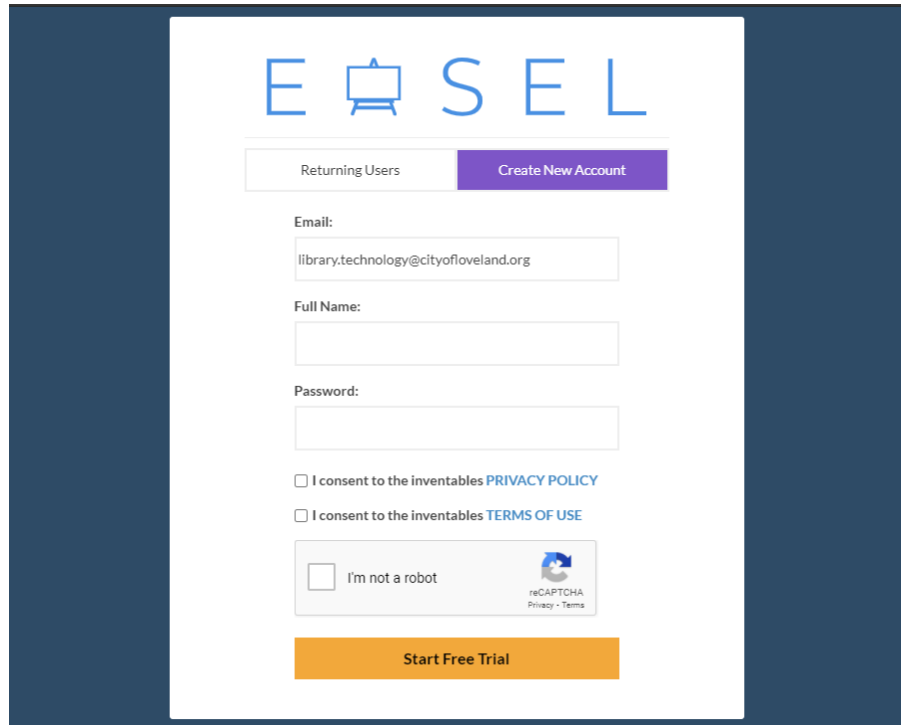
3. Go back to step i and sign in again using the new password.

b. Creating an Easel account:

i. Select the “Create New Account” tab.

The screenshot shows the Easel account creation interface. At the top, the word "EASEL" is displayed in a blue, stylized font, with the 'A' replaced by a monitor icon. Below the logo, there are two tabs: "Returning Users" and "Create New Account", with the latter being highlighted in purple. The form contains three input fields: "Email:", "Full Name:", and "Password:". Below these fields are two checkboxes for consent: "I consent to the inventables [PRIVACY POLICY](#)" and "I consent to the inventables [TERMS OF USE](#)". A reCAPTCHA widget is present, showing a checkbox labeled "I'm not a robot" and the reCAPTCHA logo with links for "Privacy" and "Terms". At the bottom of the form is a large orange button labeled "Start Free Trial".

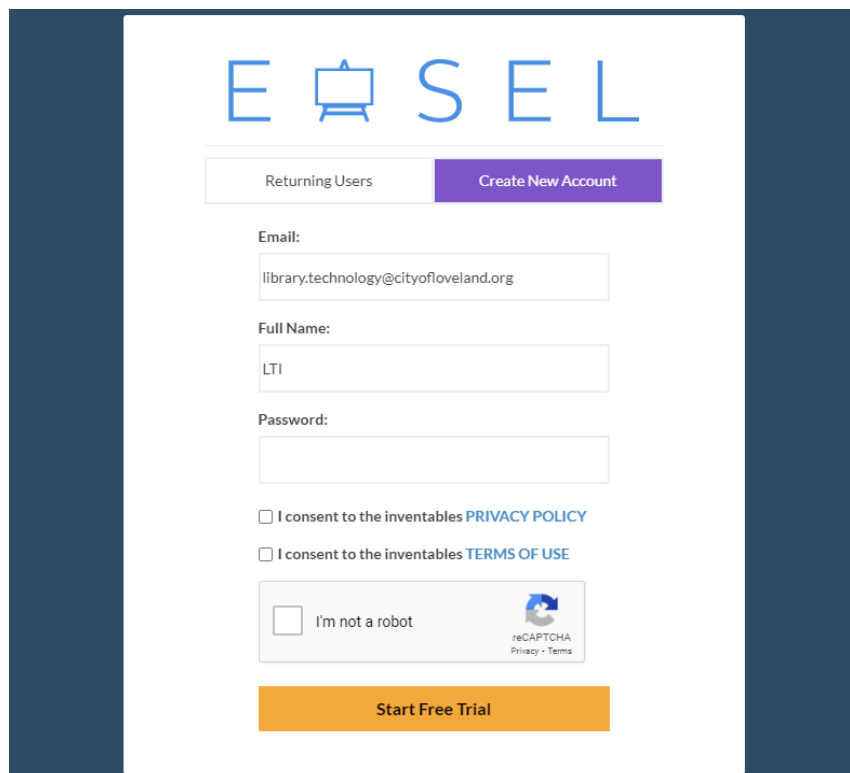
ii. Enter a valid email address into the box titled “Email”. You will use this email every time you access your account and to reset your password if you forget it, so make sure it is a valid email address.



The image shows a registration form for ESEL. At the top is the ESEL logo, which consists of the letters E, a computer monitor icon, S, E, and L. Below the logo are two tabs: "Returning Users" and "Create New Account". The "Create New Account" tab is highlighted in purple. The form contains the following fields and elements:

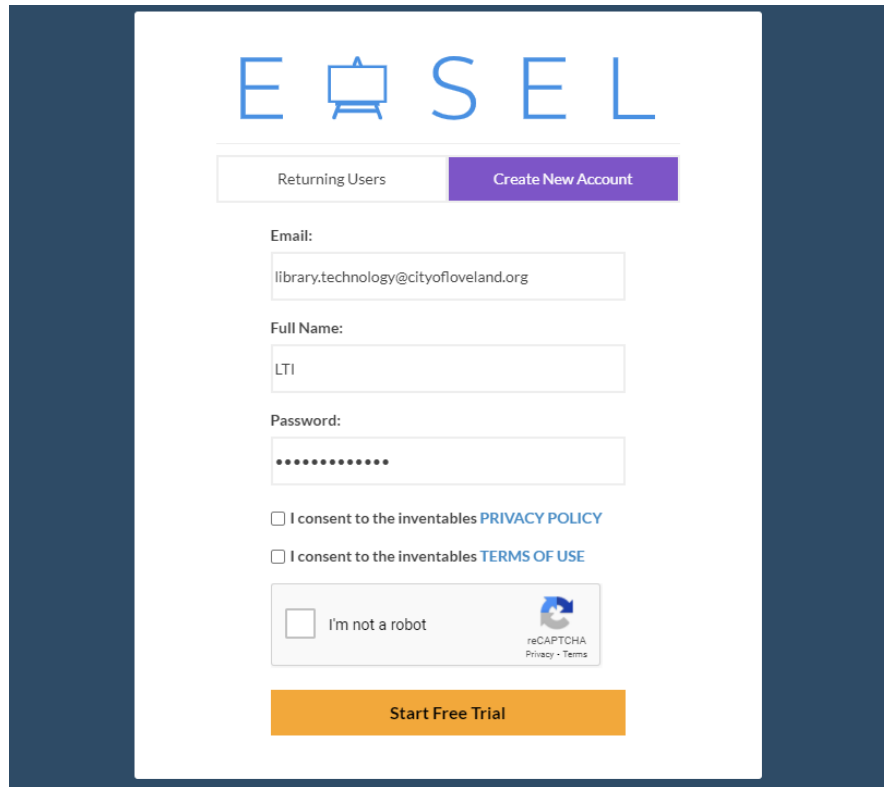
- Email:** A text input field containing the email address "library.technology@cityofloveland.org".
- Full Name:** An empty text input field.
- Password:** An empty text input field.
- Consent checkboxes:**
 - ☐ I consent to the inventables [PRIVACY POLICY](#)
 - ☐ I consent to the inventables [TERMS OF USE](#)
- reCAPTCHA:** A checkbox labeled "I'm not a robot" next to a reCAPTCHA logo. Below the logo are the links "Privacy" and "Terms".
- Start Free Trial:** An orange button at the bottom of the form.

- iii. Enter your full name into the box titled "Full Name".



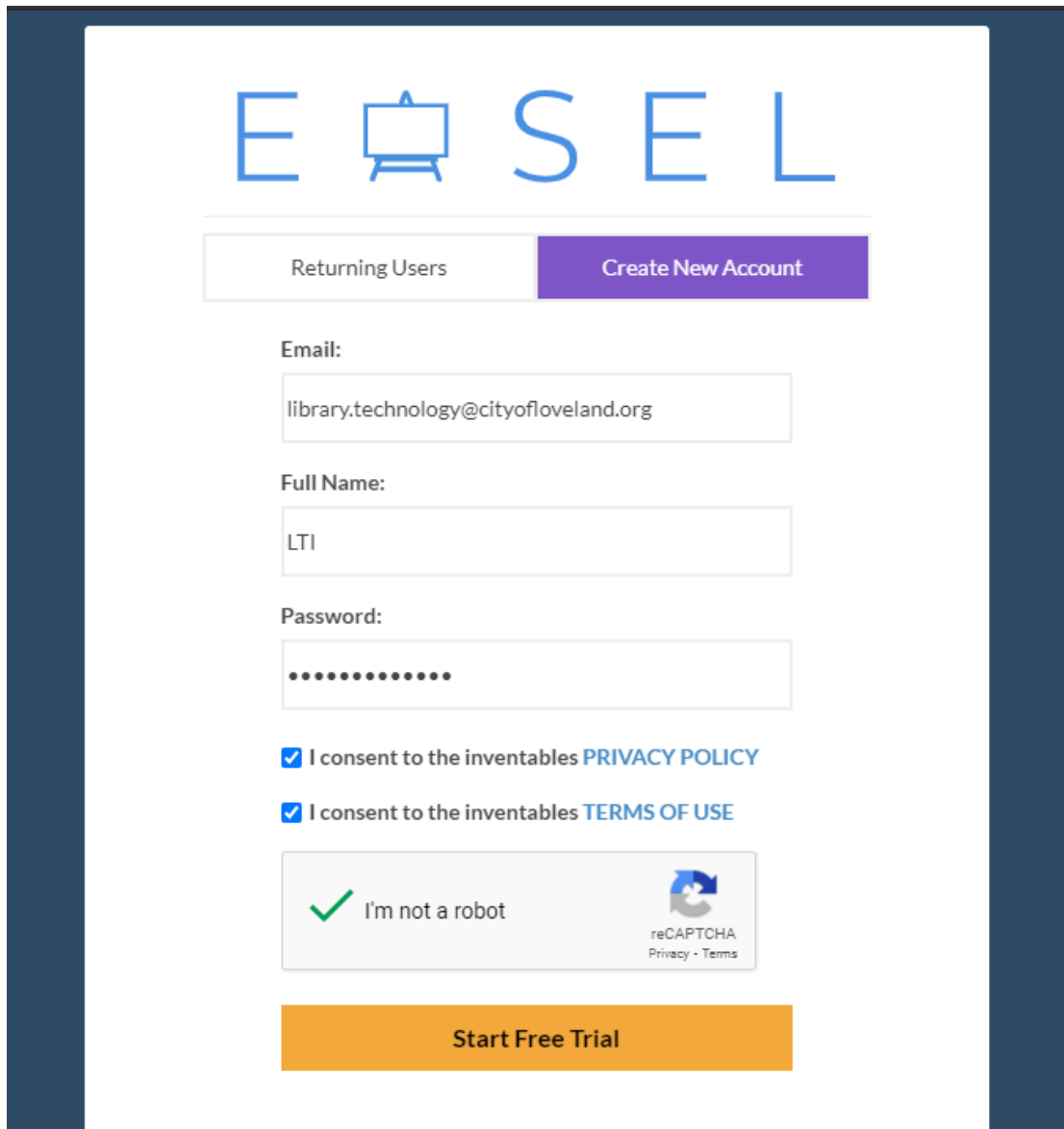
This image shows the same ESEL registration form as above, but with the "Full Name" field filled in. The text "LTI" is entered into the "Full Name" input box. All other elements, including the logo, tabs, email field, password field, consent checkboxes, reCAPTCHA, and the "Start Free Trial" button, remain the same.

- iv. Enter the password you would like to use for your Easel account in the box titled "Password".



The screenshot shows the Easel account creation interface. At the top is the 'EASEL' logo. Below it are two buttons: 'Returning Users' and 'Create New Account'. The 'Create New Account' button is highlighted in purple. The form includes fields for 'Email:' (with the text 'library.technology@cityofloveland.org'), 'Full Name:' (with the text 'LTI'), and 'Password:' (with masked characters). Below these fields are two checkboxes for consent: 'I consent to the inventables [PRIVACY POLICY](#)' and 'I consent to the inventables [TERMS OF USE](#)'. At the bottom of the form is a reCAPTCHA box with the text 'I'm not a robot' and a 'Start Free Trial' button.

- v. Click on the box next to the statement that reads "I consent to the inventables PRIVACY POLICY".
- vi. Click on the box next to the statement that reads "I consent to the inventables TERMS OF USE".
- vii. Click on the box next to "I'm not a robot".

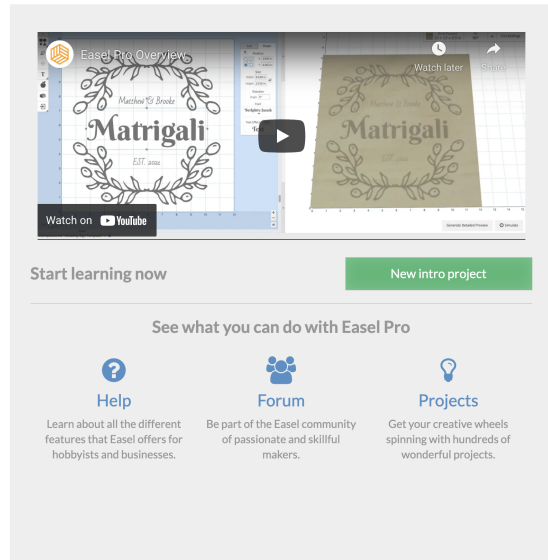
The image shows a registration form for Easel. At the top is the Easel logo, which consists of the letters 'E', 'S', 'E', 'L' in a blue sans-serif font, with a blue icon of a whiteboard on a stand between the first and second 'E'. Below the logo are two buttons: 'Returning Users' in a light gray box and 'Create New Account' in a purple box. The form fields are: 'Email:' with a text box containing 'library.technology@cityofloveland.org'; 'Full Name:' with a text box containing 'LTI'; and 'Password:' with a text box containing ten dots. Below these are two checkboxes, both checked: 'I consent to the inventables [PRIVACY POLICY](#)' and 'I consent to the inventables [TERMS OF USE](#)'. Below the checkboxes is a reCAPTCHA box showing a green checkmark and the text 'I'm not a robot', with a reCAPTCHA logo and 'reCAPTCHA Privacy - Terms' to its right. At the bottom is a large orange button labeled 'Start Free Trial'.

- viii. Click on the box that says "Start Free Trial".
1. NOTE: The Easel Pro account is free for 30 days and then it will automatically switch you back to the basic Easel account. You will not be charged for using the basic Easel Account. You do not have to buy the Easel Pro account. If you ever need Easel pro, talk to library technology and innovation staff. Below is a chart of the differences between Easel

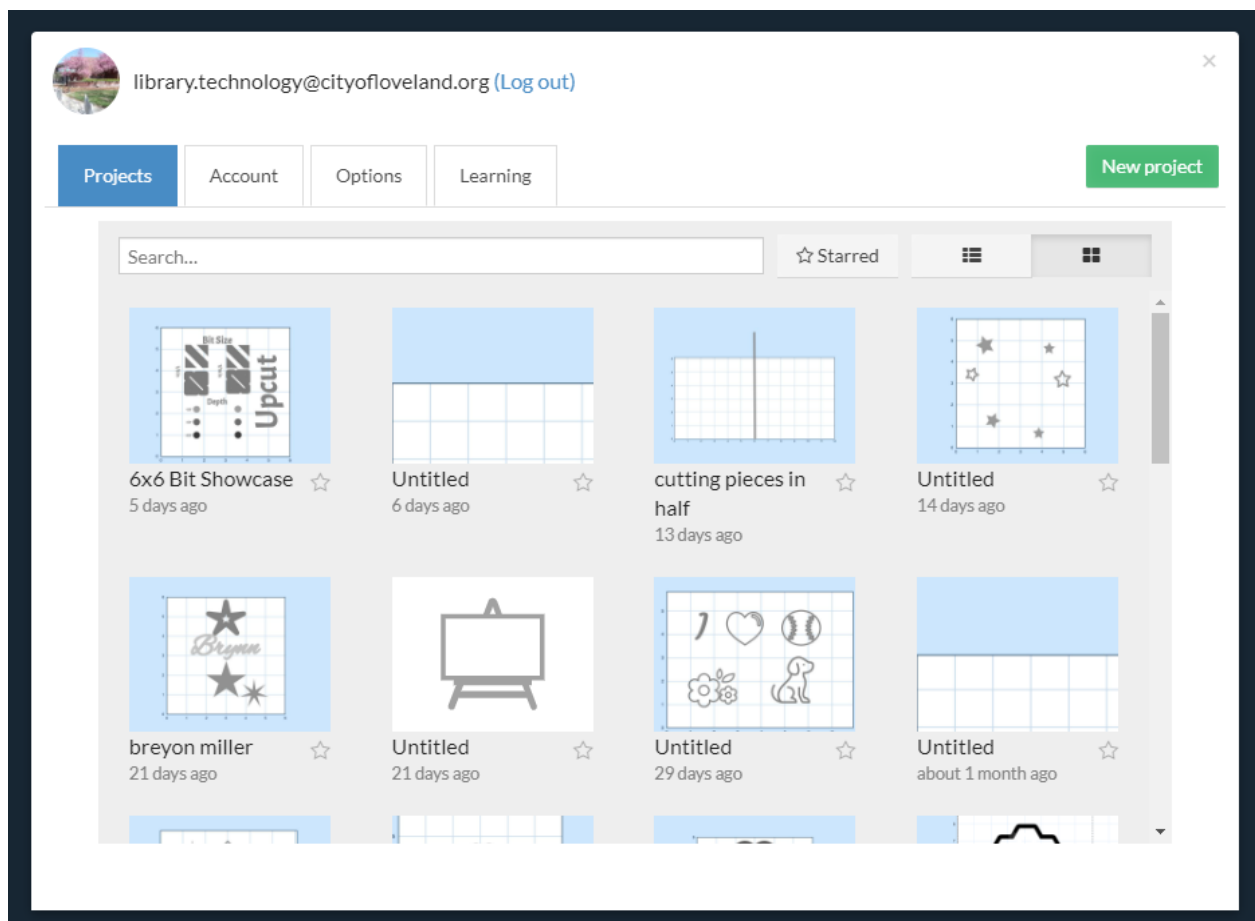
Pro and the Easel basic plan for your reference.

	Easel	Easel Pro
Design tools & HD 3D preview	✓	✓
Interactive apps	✓	✓
Continuous automatic upgrades	✓	✓
Image trace	✓	✓
SVG import	✓	✓
G-code import	✓	✓
Built-in material and bit libraries with settings	✓	✓
Recommended cut settings	✓	✓
Automated toolpath animation	✓	✓
Two-stage carving (roughing and detail)	✓	✓
Workpiece organization	✓	✓
Design library	✓	✓
Standard fonts	✓	✓
Feedrate override	✓	✓
V-carving	✗	✓
Customizable font library with 300+ fonts	✗	✓
Raster Carving	✗	✓
Text Effects	✗	✓
Machine Parking	✗	✓
Large Material Tiling	✗	✓
Pro Design Library	✗	✓
Toolbox with Custom Bits, Materials	✗	✓
Save and use custom cut settings	✗	✓

4. At this point you should be signed in and see something similar to:

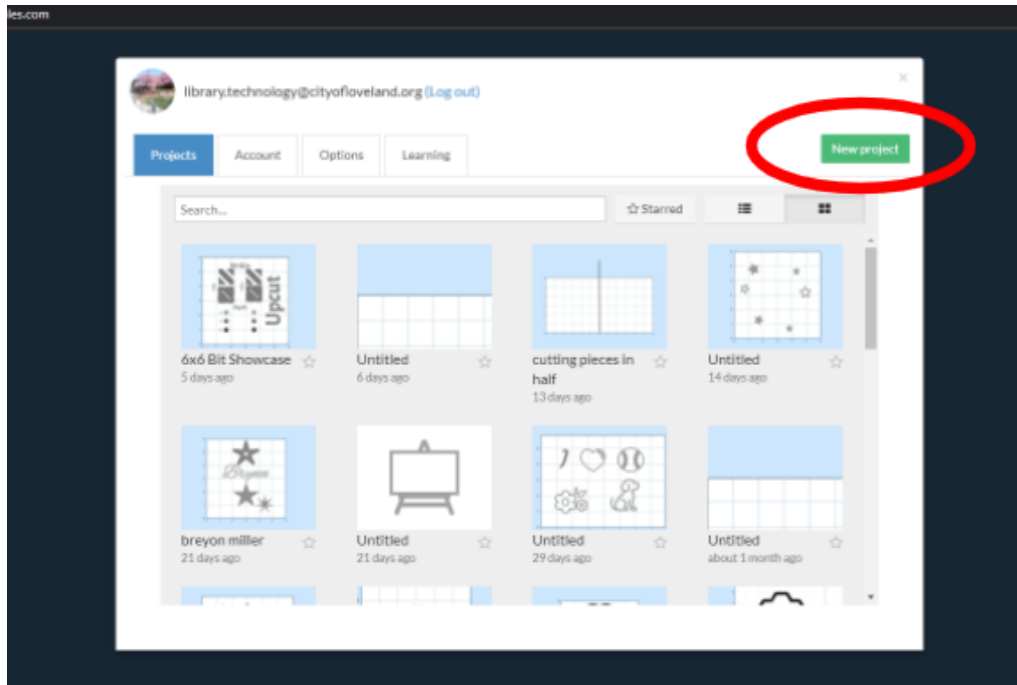


5. If you would like to watch this video, feel free. If you would not, click on the “Projects” tab on the upper left-hand side of your screen. You should now see this:

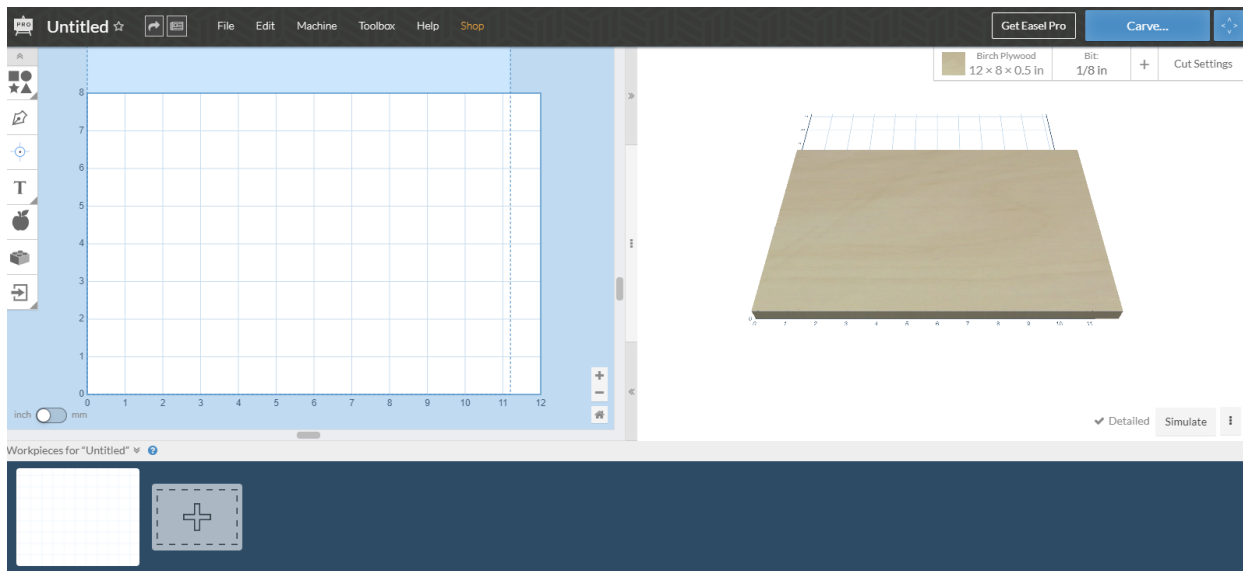


Setting Up Your Workspace

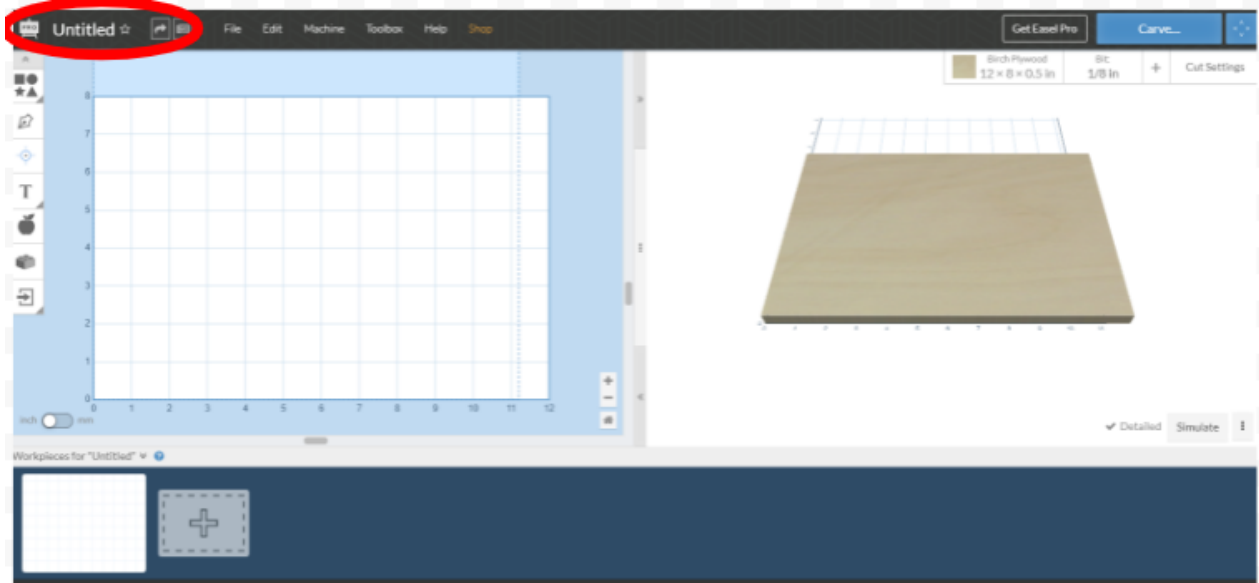
1. Click on the "New Project" button at the top right side of the screen.



2. A new project space should now open up and look similar to the following:

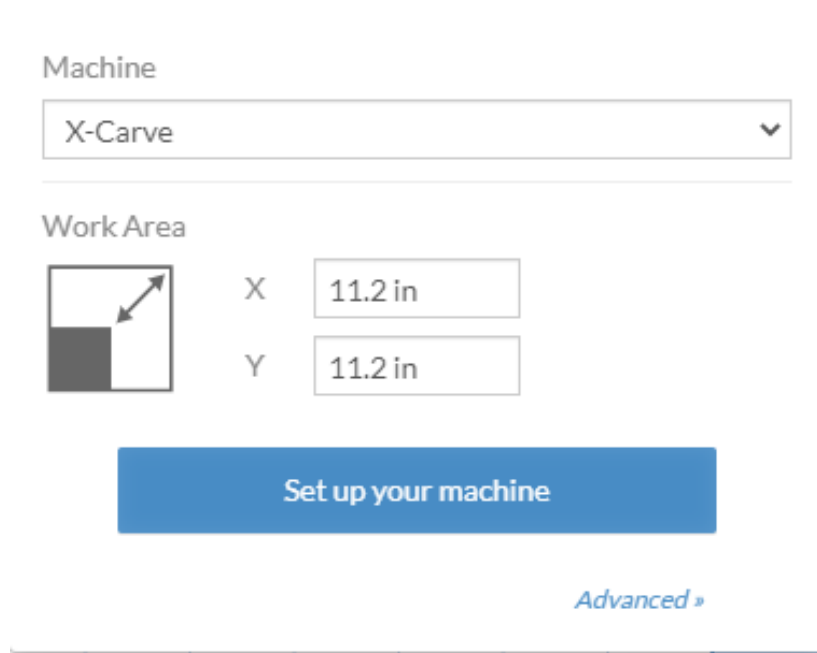


3. If you would like, you can change your project name by clicking on the area that says "Untitled" in the top-left corner.

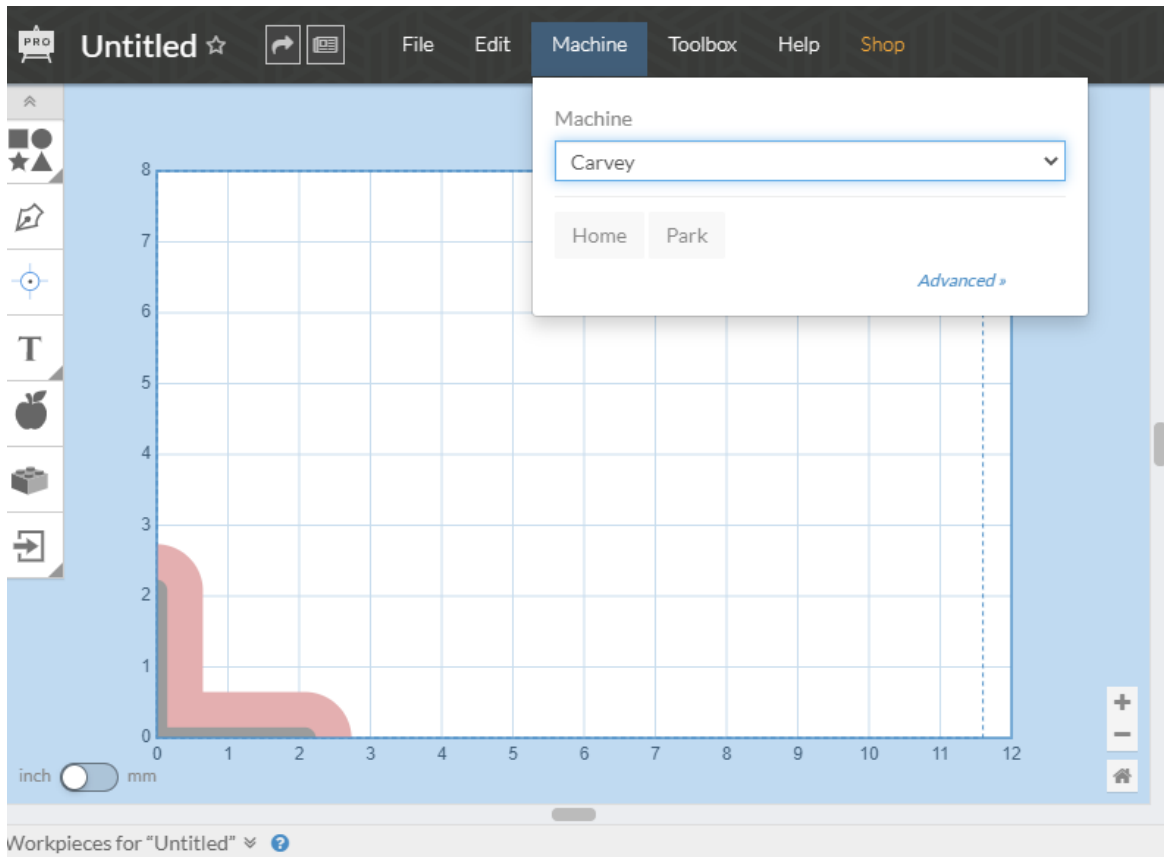


4. Changing the Machine Type

- a. Click on the tab marked "Machine" on the top-left side of the screen. This should pop up:



- b. Click the drop-down button on the area that says "X-Carve" to change to your machine type. **Select "Carvey"**. This should cause a red caution area to display on the bottom-left part of your design. This caution area cannot be carved.




5. Changing the Material Type

- a. Click on the tab on the upper-right side of the screen that says "Birch Plywood" and shows a series of measurements. The following should pop up:

Need Help? [Bit and Material Recommendations](#)

[PRO](#) + Add a Material

Material Type

 Birch Plywood ▾

Material Dimensions

Tiling - Oversize material carving
To carve pieces larger than the machine's work area, enter the desired length. [PRO](#)

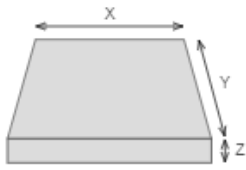
[Learn More](#)

Enable tiling ⓘ
☐ No ☒ Yes

Width (X)
12 in

Length (Y)
8 in

Thickness (Z)
0.5 in




- b. Choose the material you would like to carve. Materials the library offers can be found to the right of the Carvey machine.
 - c. Click on the box that says "Birch Plywood". Scroll up and down to choose whichever material you would like to use. Some common materials are 2-color HDPE, MDF board, and various styles of wood.
6. Changing the Material Measurements
- a. Once you select your material, you need to enter some measurements to make sure your design will fit on the material you have:
 - i. Use a caliper or a ruler to measure the length, width, and height of the material you are using. For the purposes of this tutorial I am using MDF Board that is 8 inches by 6 inches and 0.2 inches thick.

- ii. Still on that same tab, enter your length, width, and height in the boxes provided. Make sure to hit enter after entering each value in or it will not “take”.

Need Help? [Bit and Material Recommendations](#)

[PRO](#) + Add a Material

Material Type

 Birch Plywood ▾

Material Dimensions

Tiling - Oversize material carving
To carve pieces larger than the machine's work area, enter the desired length. [PRO](#)

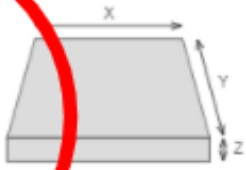
[Learn More](#)

Enable tiling ⓘ
No ☐ Yes ☐

Width (X)
12 in

Length (Y)
8 in

Thickness (Z)
0.5 in



7. Changing the Bit Type

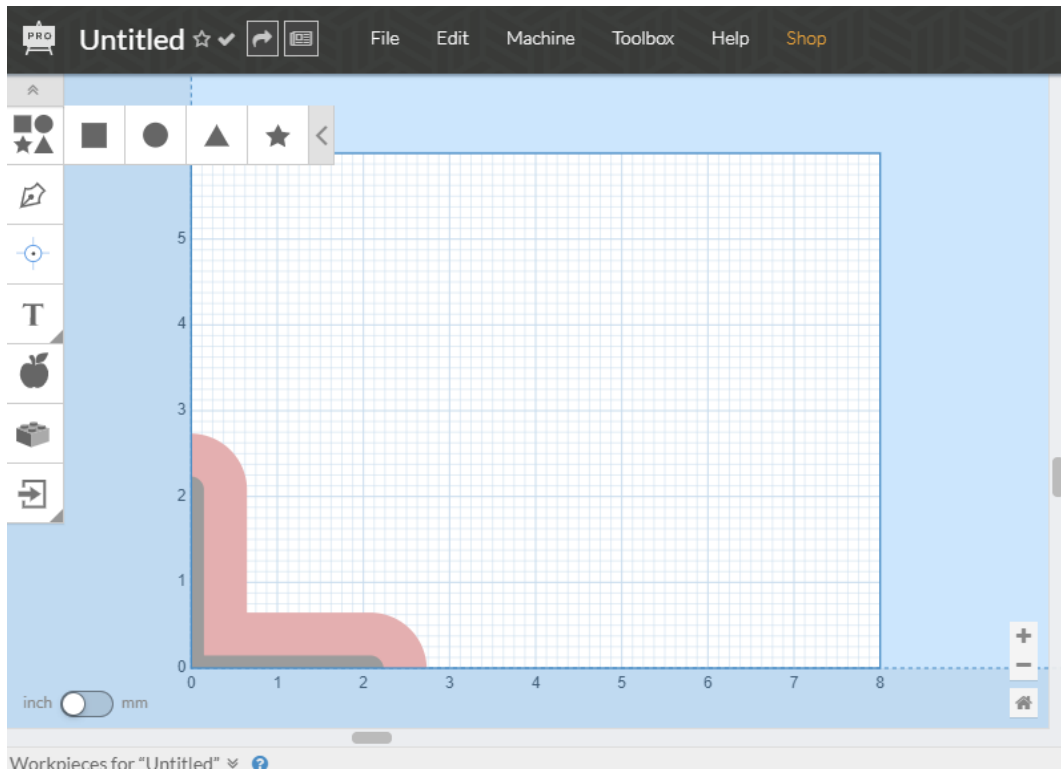
- a. The last step of setting up your workspace is to select a bit. Click on the tab that says “1/8 in” in the upper-right corner of the screen. You can use many styles of bits for many different carved outcomes. For the purposes of this tutorial, choose the 1/16 inch upcut bit.

Designing

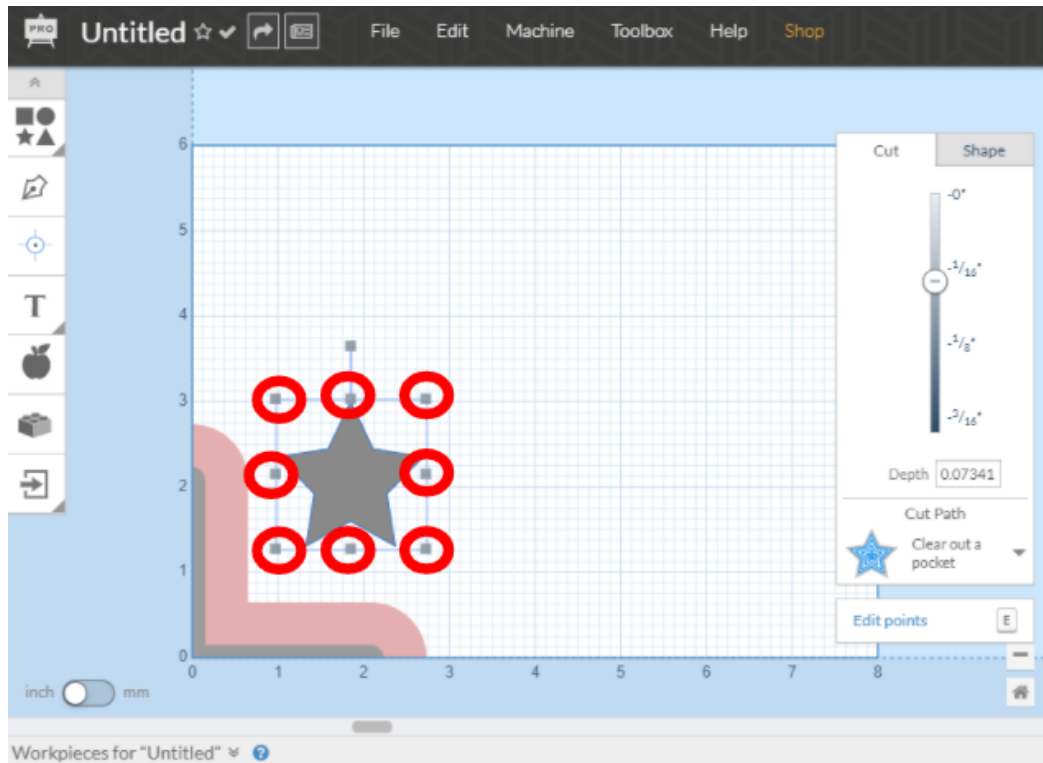
1. Now it is time for you to start your design! You can use shapes, apps, and text boxes to make your designs, as well as import designs to carve if you would like. For this tutorial we are going to use two simple elements, a star, and a text box.

2. Placing Stars:

- a. To place a star, click on the button along the left side of your screen that shows a star, circle, triangle, and square. A pop-out should show up.



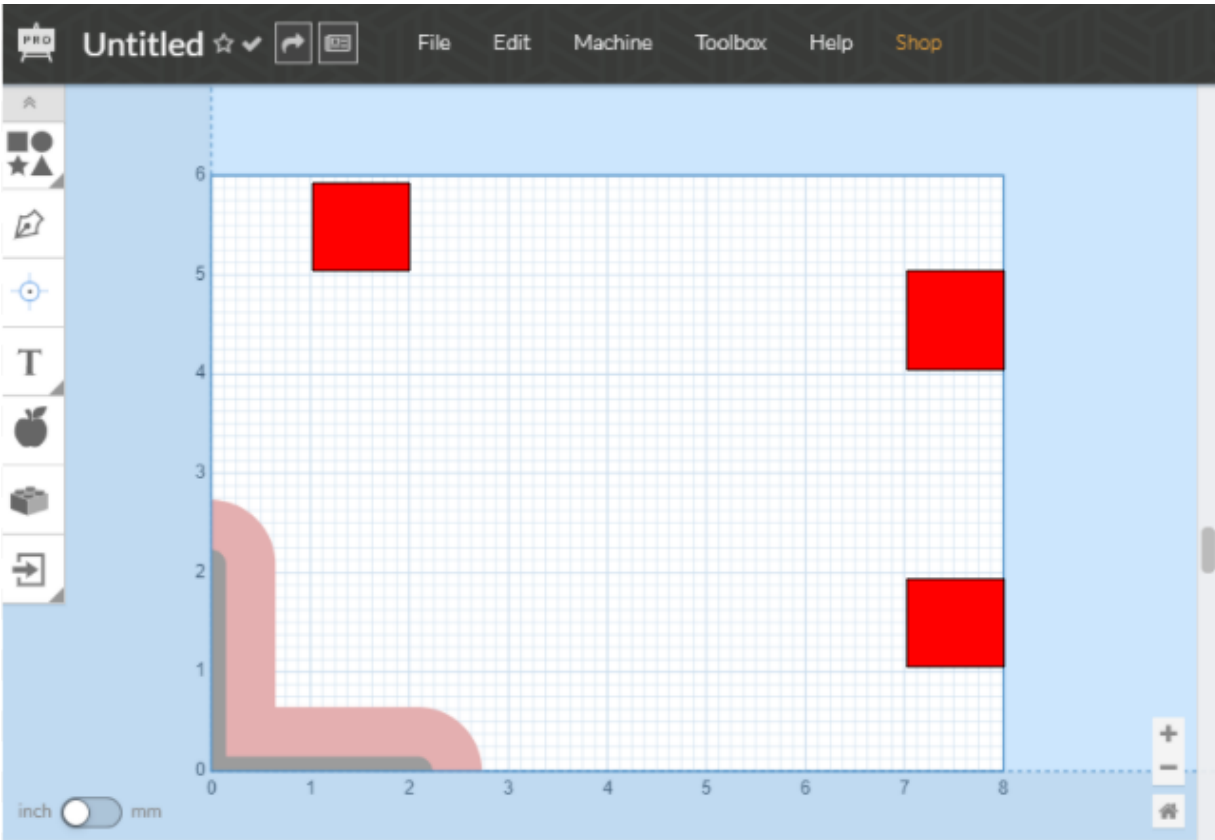
- b. Click on the star on the pop-out. A star should now appear on the material.
- c. To adjust the size of the star, click on the star and drag the boxes that show up around it. Drag it out to make the star bigger, and in to make the star smaller. You can adjust the star however you would like.



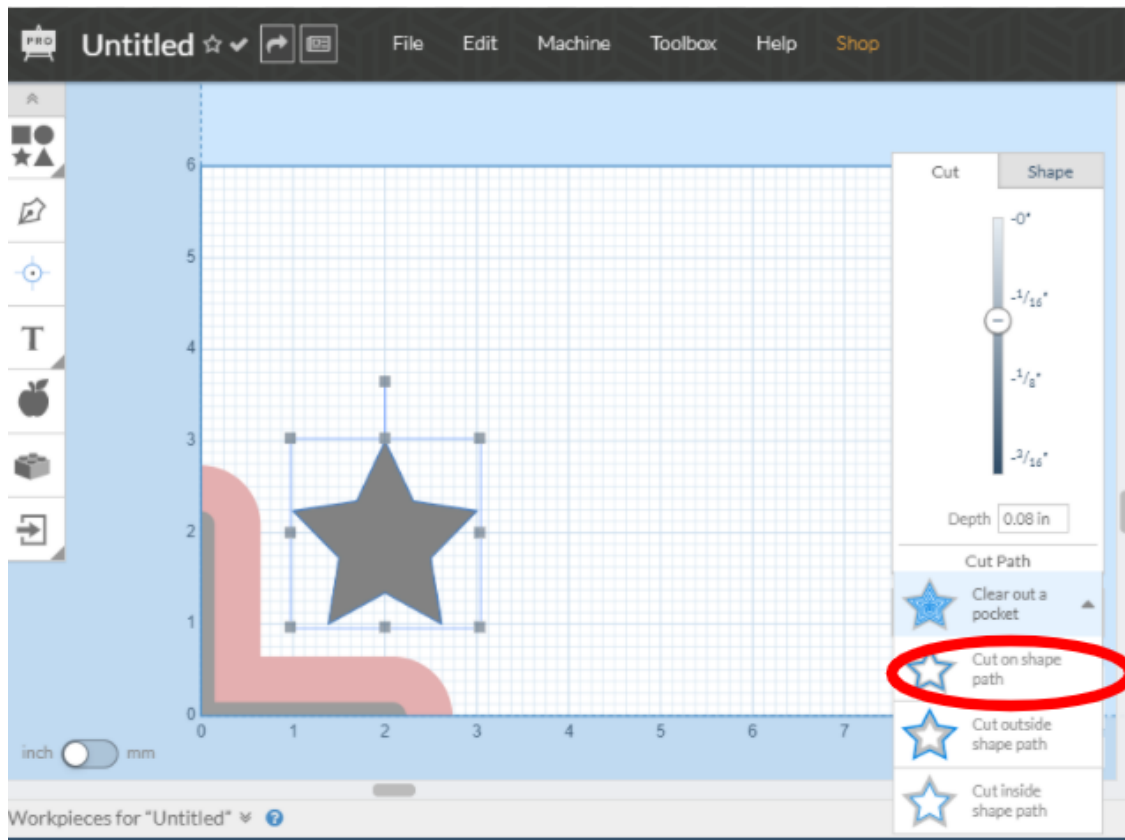
- d. Once you are done adjusting the size of the star, change it's depth. You can do this by dragging up and down the slider that should appear in the center of the screen.



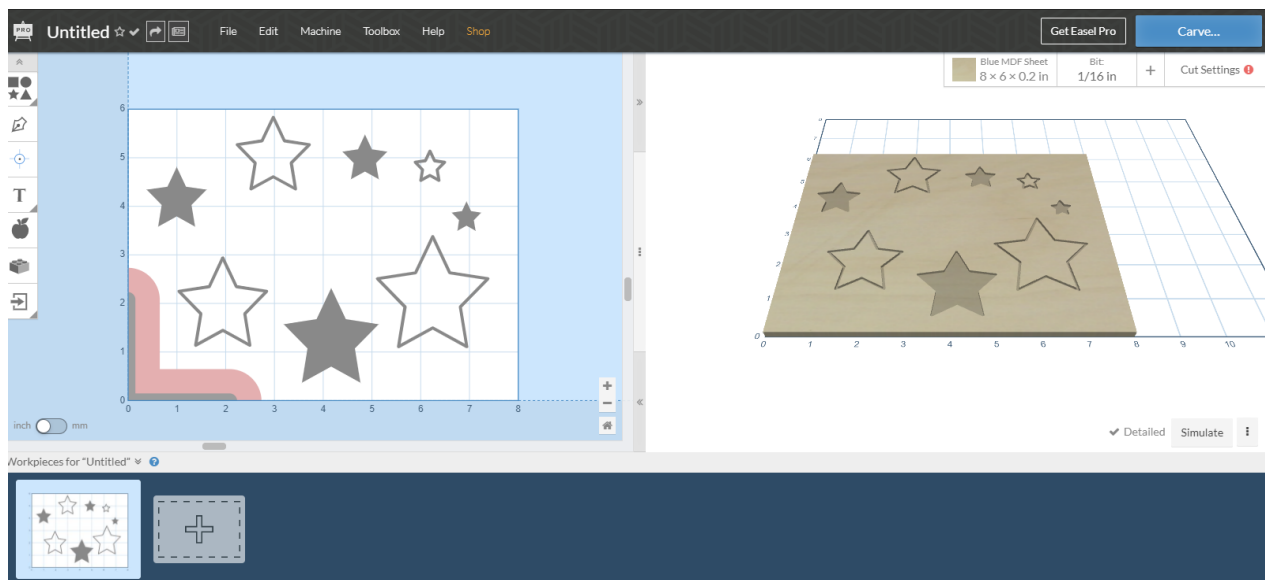
- e. Once you are done adjusting the size and depth of the star, you may move it wherever you would like within the outlined area. **PLEASE NOTE: you must not put any designs on the 3 squares within the outlined area shown below or the red L in the bottom left corner of the material. You will need these areas clear so you can hold the material in place later.**



- f. Changing A Star from being Filled-In to Outlined
- If you would like to make the star an outline rather than a solid, click on it once again, and underneath the depth slider there is a box that says "Clear out a pocket". Click on that box and select "Cut on shape path".

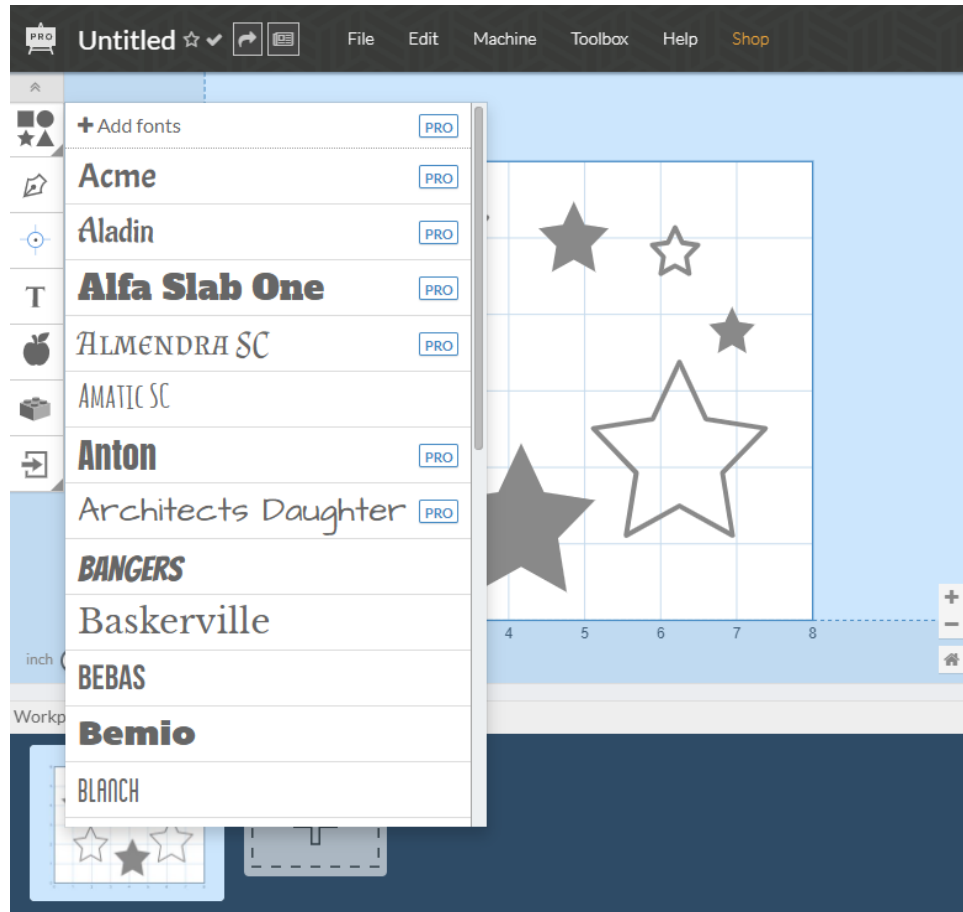


g. Continue steps a-f until you have placed all the stars you would like. Below is an example of how it could look. If you would like to place letters on your design, make sure to leave room for them!

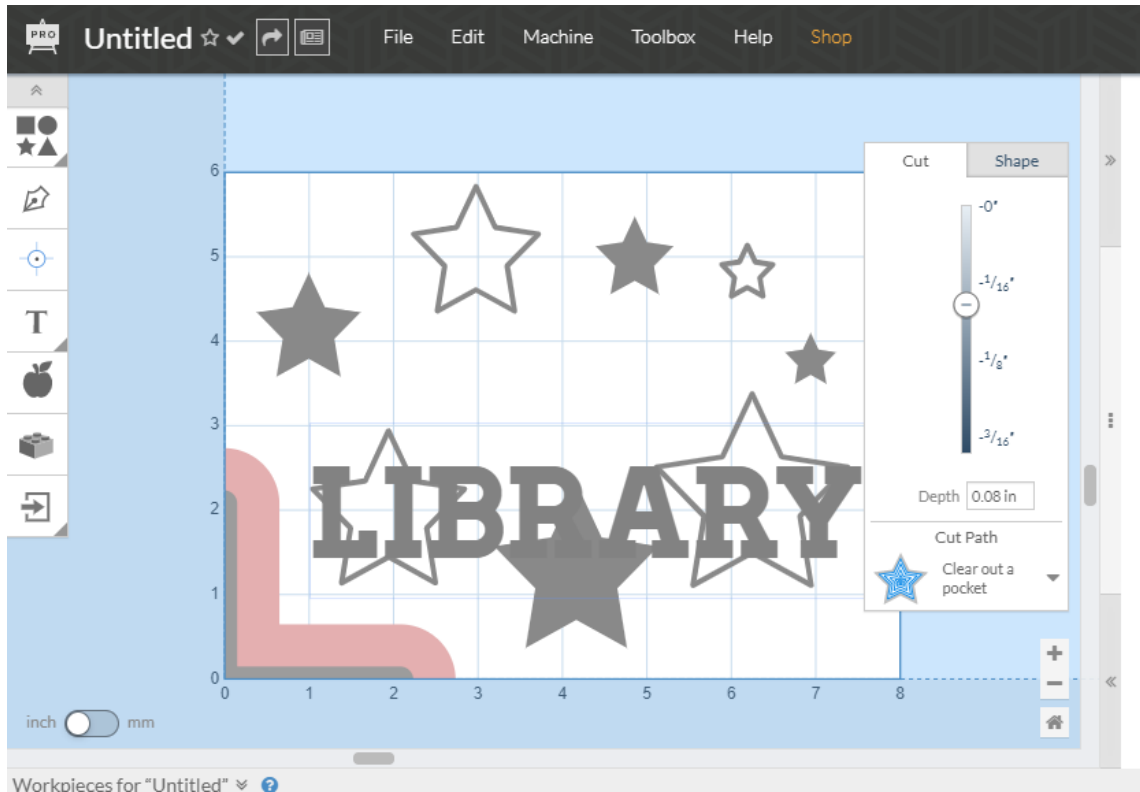


3. Adding Text

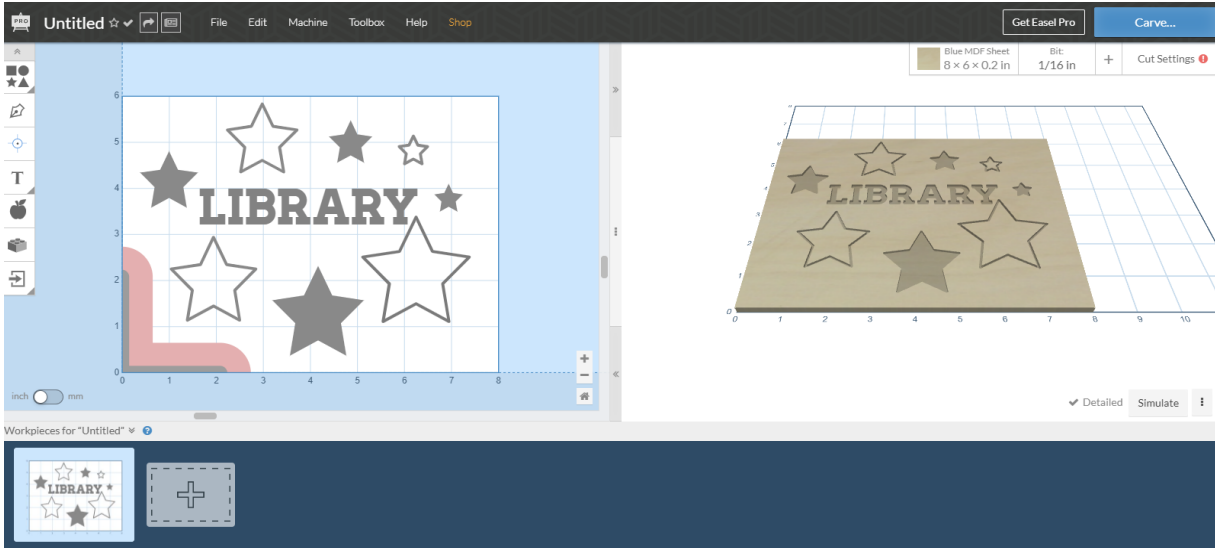
- a. To add text, click on the button on the left edge of your screen that looks like a capital T. Once again a pop-up should show.



- b. Choose the style of text you would like to use. Homestead and Bemio usually show up very well without having to use a V-bit.
- c. Click on the style of text you chose. A text box should show up on your design.
- d. Click on the text box and type what you would like to carve. In this case, Library.

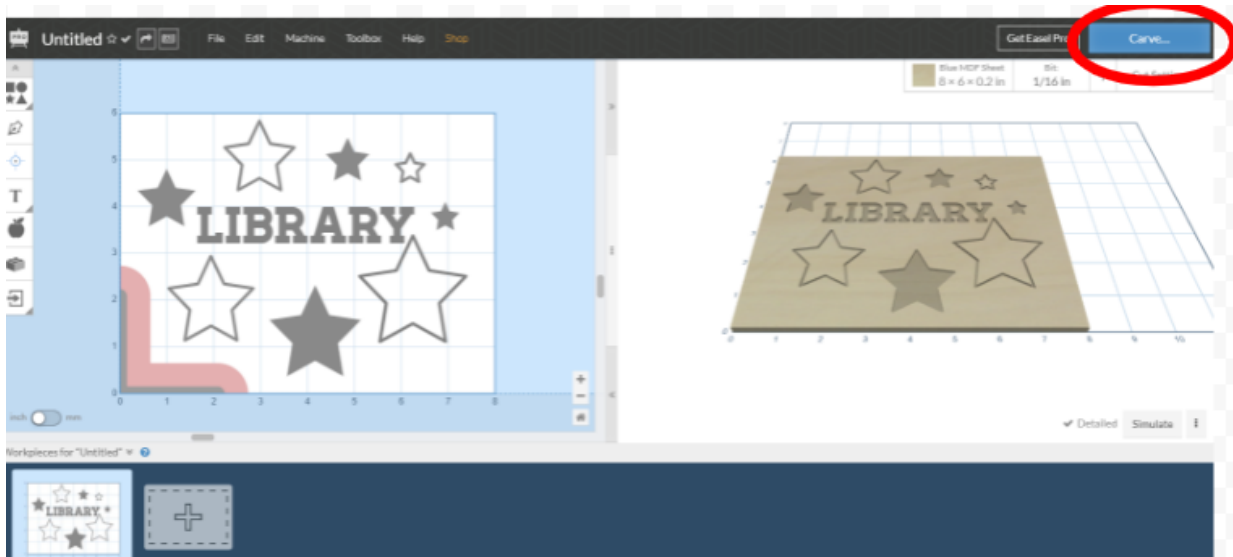


- e. Once again you can use the little boxes that show up around the text box to change size, the slider to change depth, and you can move the entire text box by clicking on the center of the text box and dragging it to where you would like it to be.
- f. You can repeat steps a-e until you have created your final design you would like to carve. Below is another example:



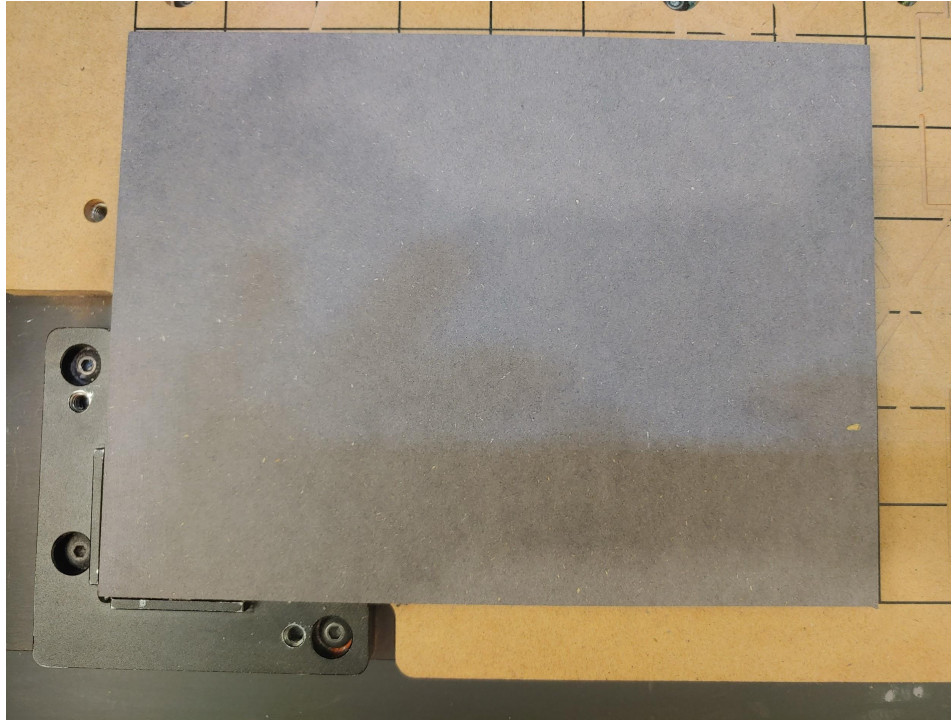
To Carve:

1. Turn on the Carvey. The switch is on the back right side.
2. Click the button on the top left corner of your screen that says "Carve...".

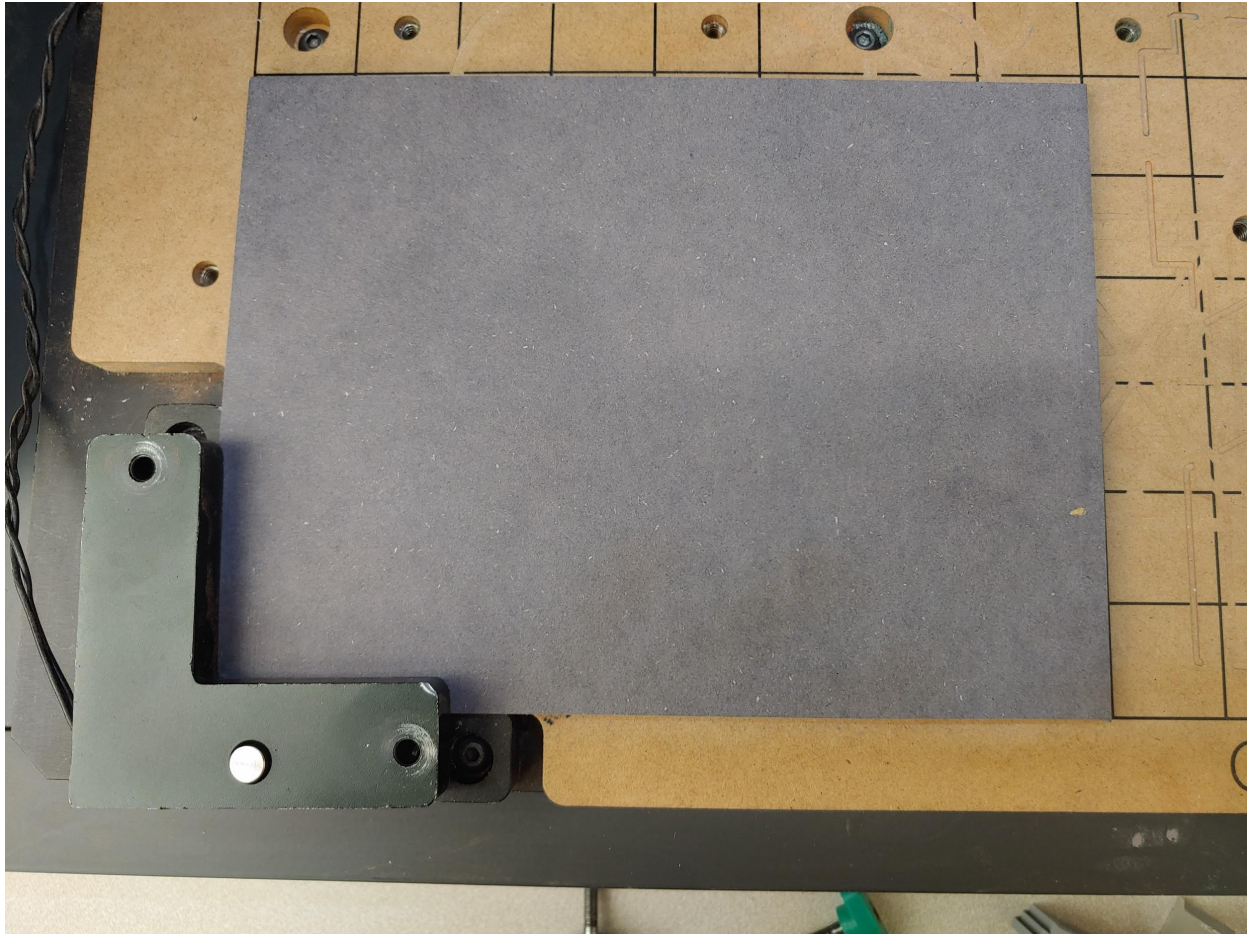


3. Follow the next few steps Easel gives you EXACTLY. **Failure to correctly follow these steps could result in a failed carve, broken bits, or other worse problems.** If you already know how to clamp the material, skip to step 5.
4. How to Clamp Down the Material

- a. Line up the bottom left edge with the metal lips of the smart clamp on the Carvey. Make sure the bottom edge of the material also lines up with the black line that extends out from the smart clamp.

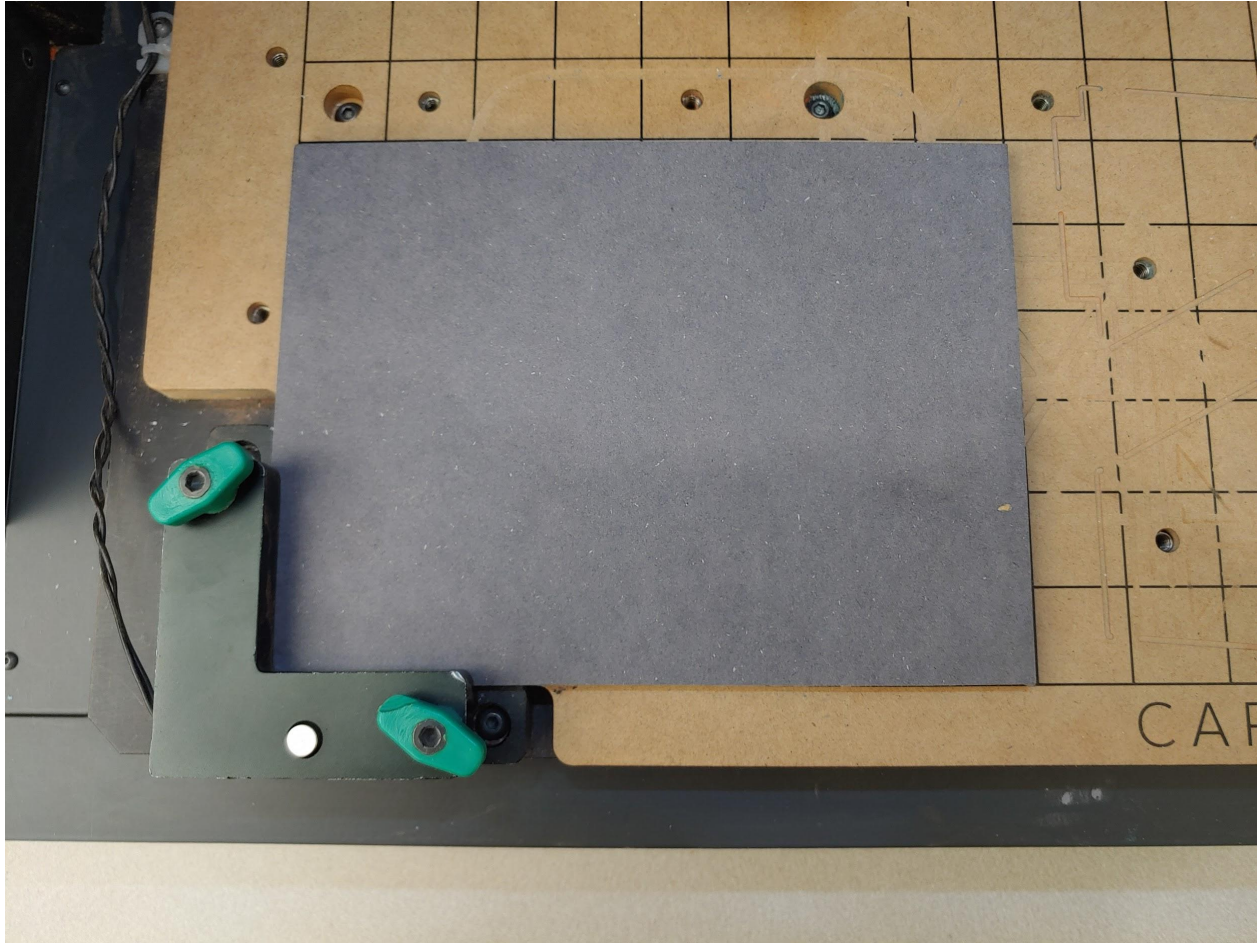


- b. Place the black L (smart clamp) on top of the bottom left corner of the material as is shown below.



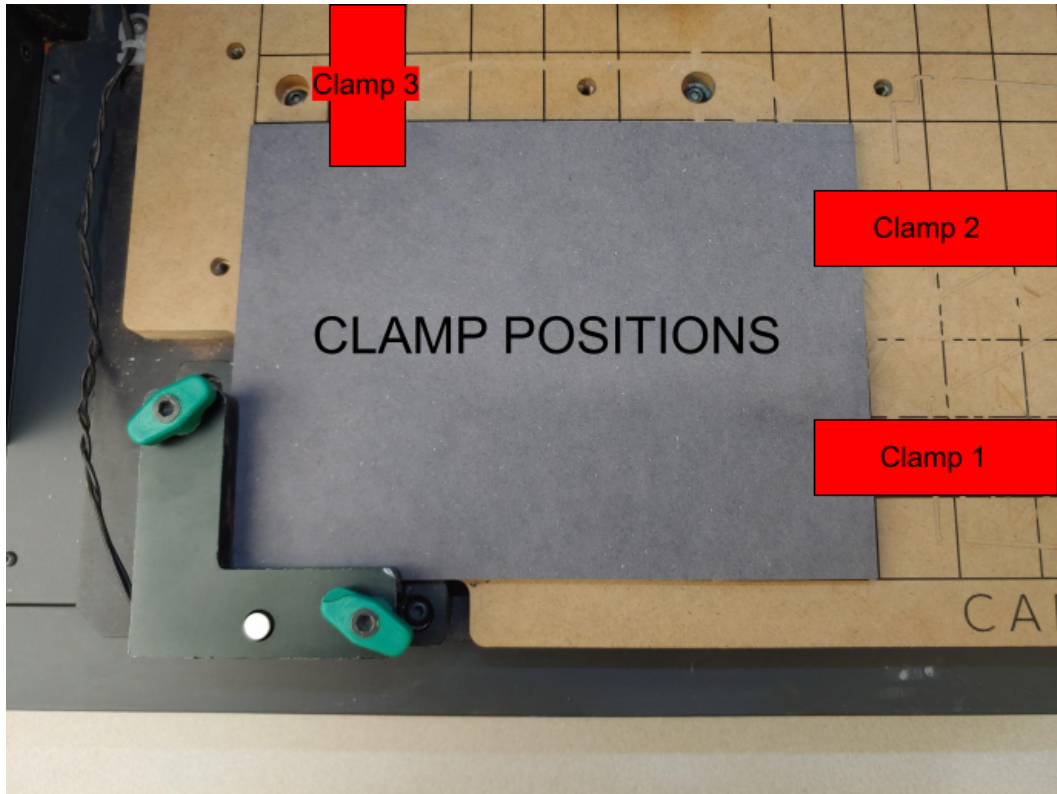
- c. Use two screws to tighten the smart clamp down EVENLY. (Stick the screws through the two holes on the smart clamp and tighten.) Easel should tell you which screws to use once you hit "Carve..." and proceed through some of the steps, but if not here are some good rules of thumb.
- i. Use **GREEN** screws for less thick materials. (up to 0.3 inches)
 - ii. Use **BLUE** screws for materials of a medium thickness. (0.5 to 0.7 inches)
 - iii. Use **RED** screws for materials with a thickness of more than 0.7 inches.
 - iv. **NOTE: The blue and red screws may not tighten down the smart clamp to the material. This is not**

a problem as the other clamps will hold the material in place.



d. Place the Rest of the Clamps

- i. In addition to the smart clamp you should use 3 other clamps to hold the material in place. The locations are shown in this photo:

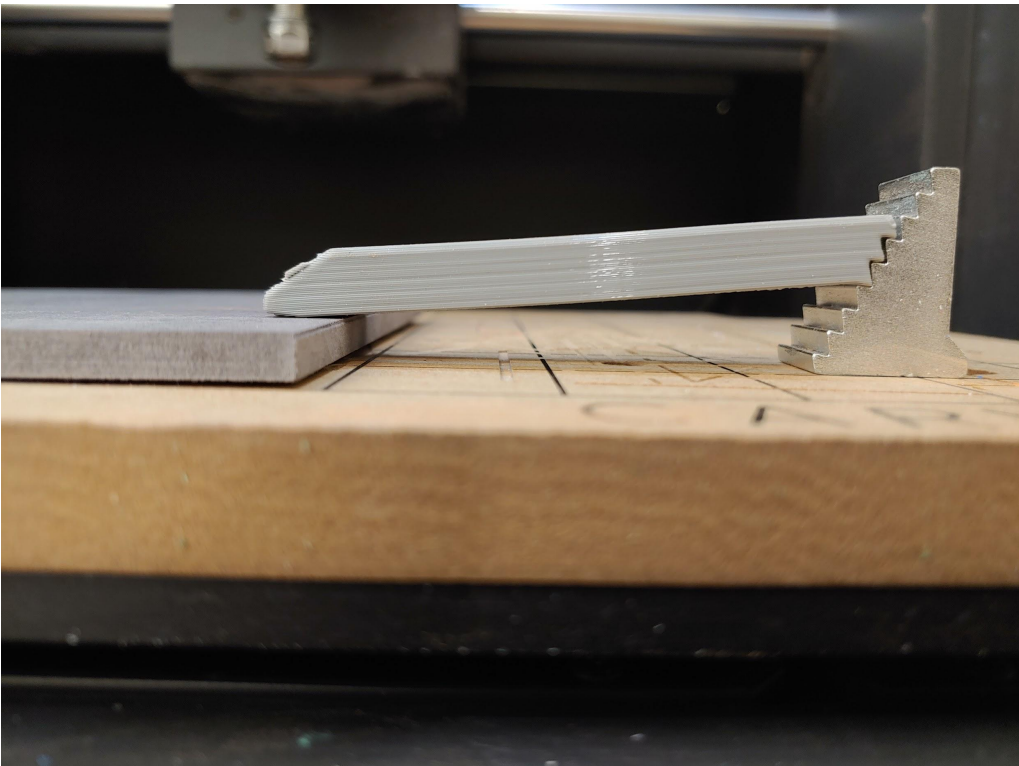
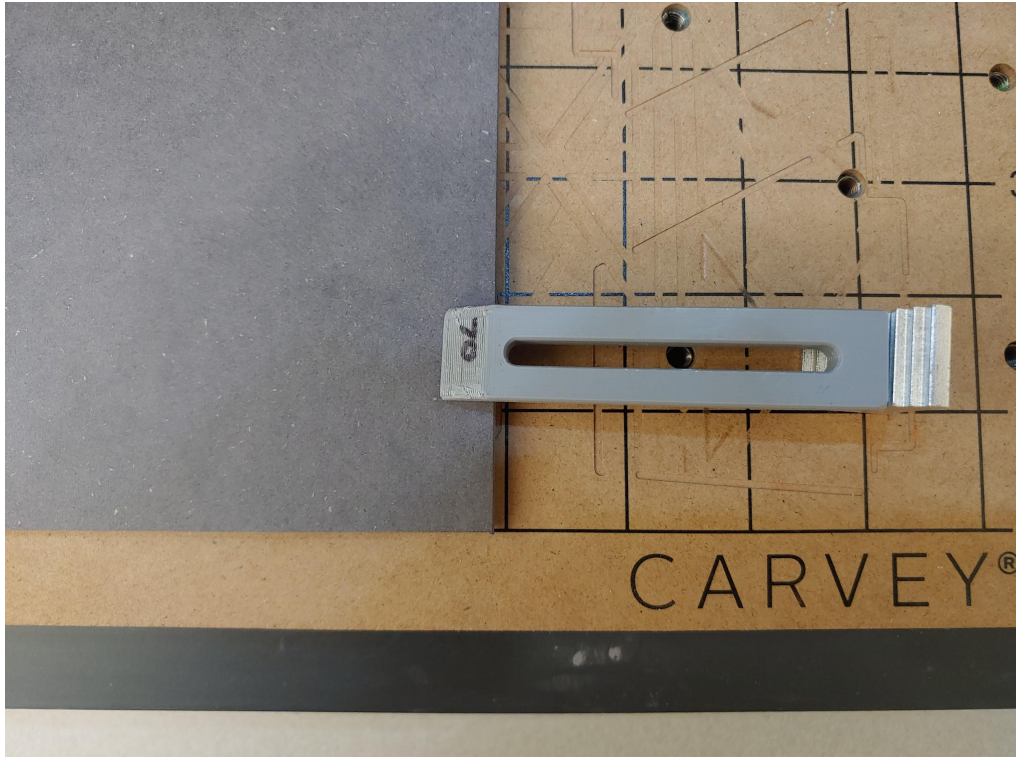


ii. To Clamp

1. Place a metal stair behind a hole into which you will place the screw.

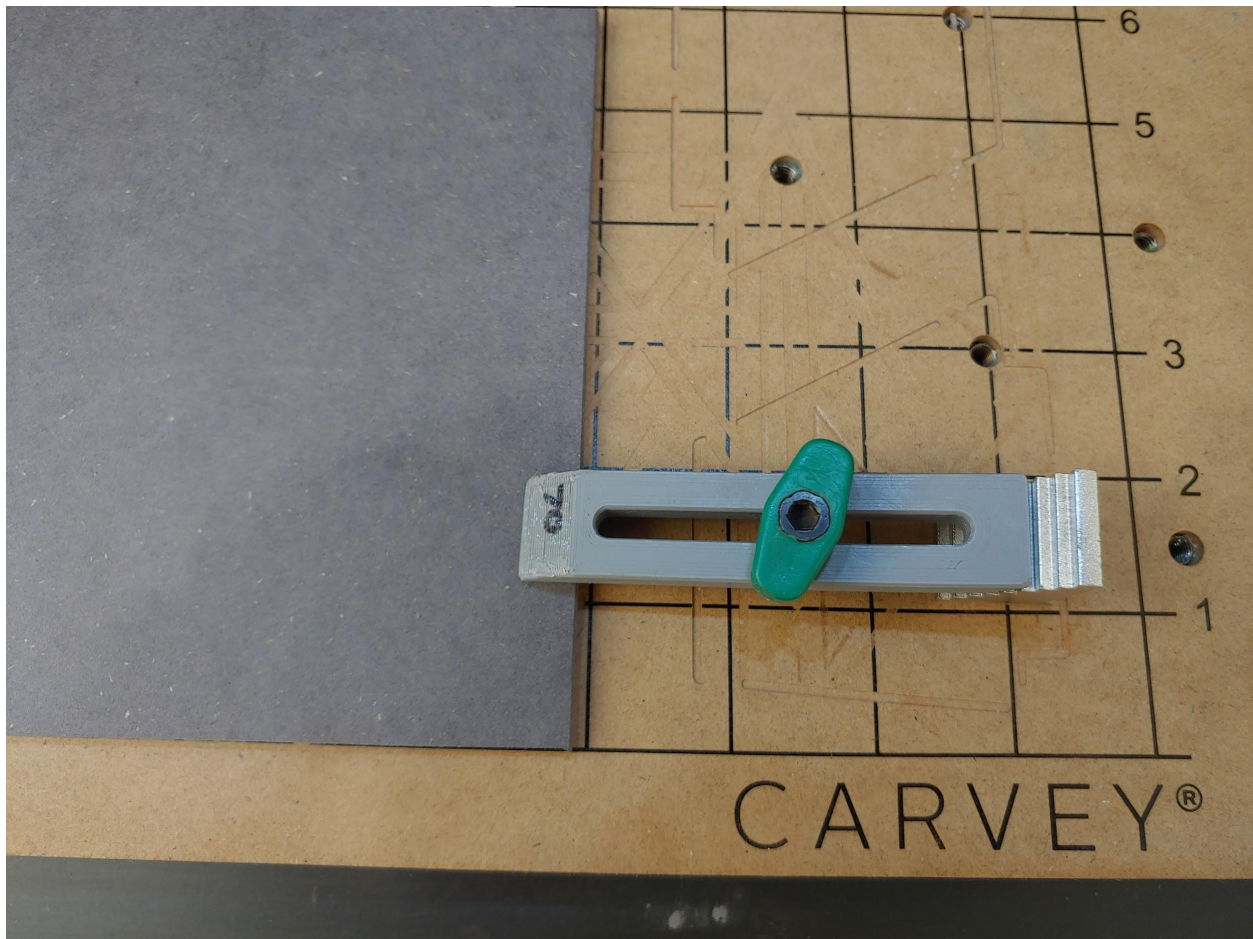


2. Place a plastic piece on top of both the metal stair and the material. Generally it is better to place the stair side slightly higher than the material. Make sure you use the side with notches on the plastic piece with the metal stairs (refer to picture).

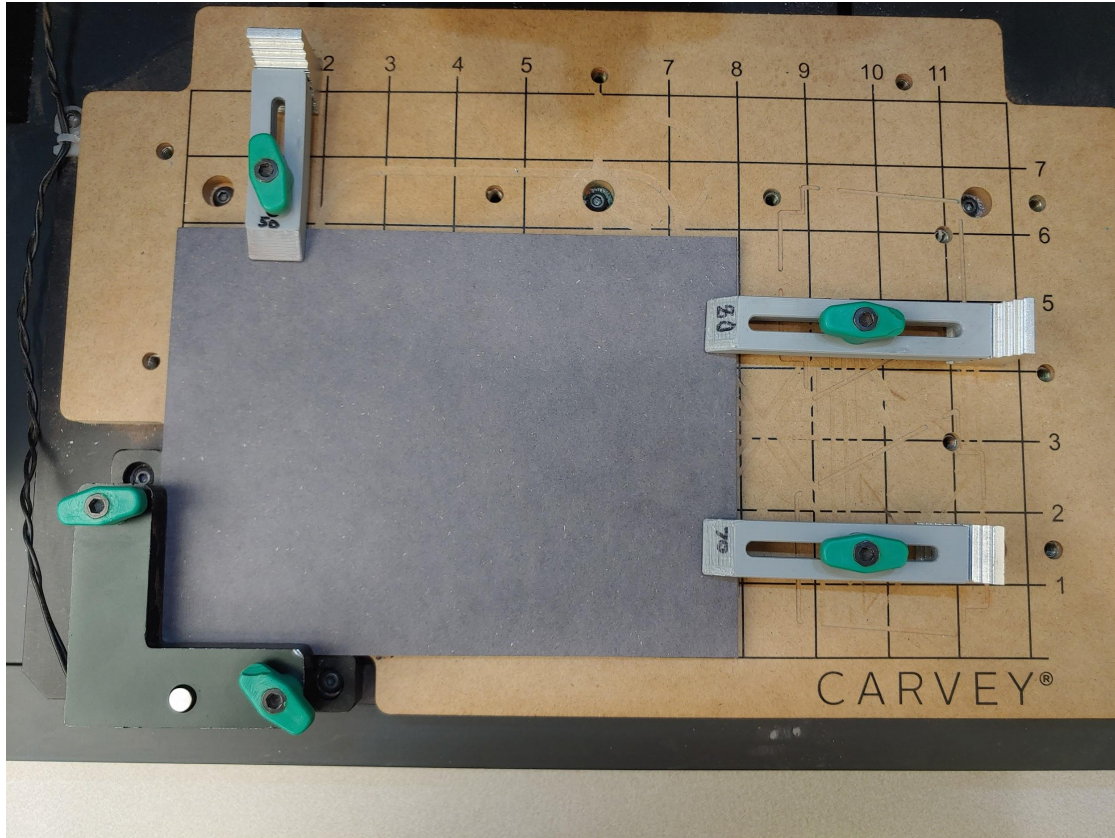


3. Place the screw through the hole in the center of the plastic piece and into the hole in the board. You should use the same color of

screw as you used for the smart clamp.
Tighten the screw with your fingers until the plastic is no longer able to move in any direction.



4. Repeat on the other two clamp sites. In the end it should look like this:

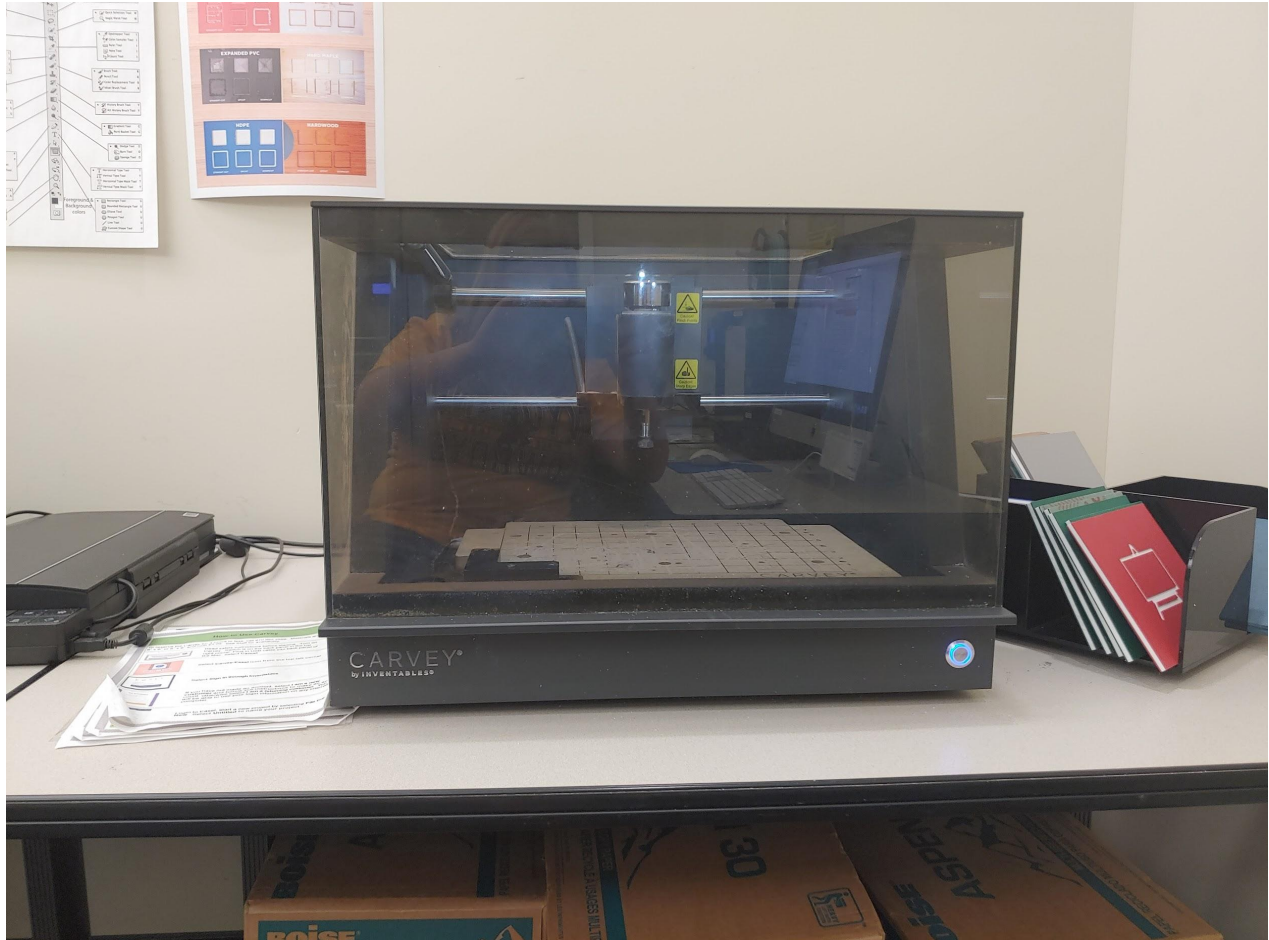


5. Ask a library technology employee to put the correct bit into the Carvey machine.
6. Wait for your carve to finish. Be patient! An estimated carving time will show up on the screen, however, this time is not always accurate.
7. NOTE: The blue button on the bottom-right front of the machine is the EMERGENCY SHUT OFF. Always monitor your carve, and if a problem does arise, push that blue button and the carve will immediately abort.



After the Carve

1. Wait for a library technology employee to remove the bit from the machine.
2. Unscrew all of the screws and take them, the metal stair-looking pieces, and the plastic pieces out of the machine. Place them back into the container.
3. Take the black L at the bottom-left corner off the top of the material being careful not to pull on the wire connecting the piece to the machine.
4. Vacuum off your carve using the miniature vacuum (available from the library technology employee) and take out your carve.
5. Use the vacuum and a cloth to finish cleaning out the inside of the machine. Try to get as much of the drilling particles out as you can so that the machine can be used by others at a later time with little to no mess. Use the rule "leave it better than you found it!" as a guide. An example of a clean Carvey is shown below.



6. If you need, use the toothbrush to clean out your carve. Some materials, such as 2-color HDPE, will have rough edges. The toothbrush can be used to rub away those extra bits that are still stuck on the material.

Extra Enrichment Videos

- <https://www.youtube.com/watch?v=wAbzwHTJhYA>
- <https://www.youtube.com/watch?v=5SZqTwPmK9w>
- <https://www.youtube.com/watch?v=I5X1RnWvpBc>
- <https://www.youtube.com/watch?v=ylkgtwj8CZI>