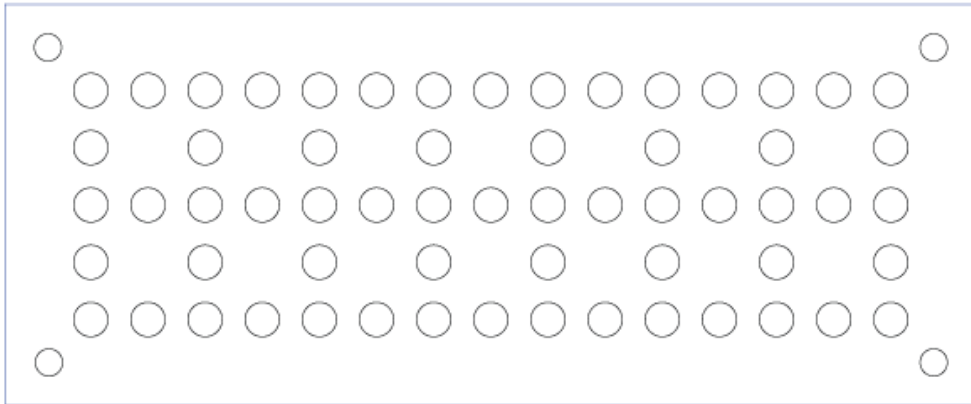


How to Make a Custom Clock Face in Adobe Illustrator

Part 1 - Getting Ready and Removing Extra Holes

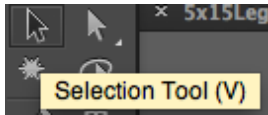
When you created your clock, you should have built it using a Lego-compatible board like this:



This will be the start of our custom face.

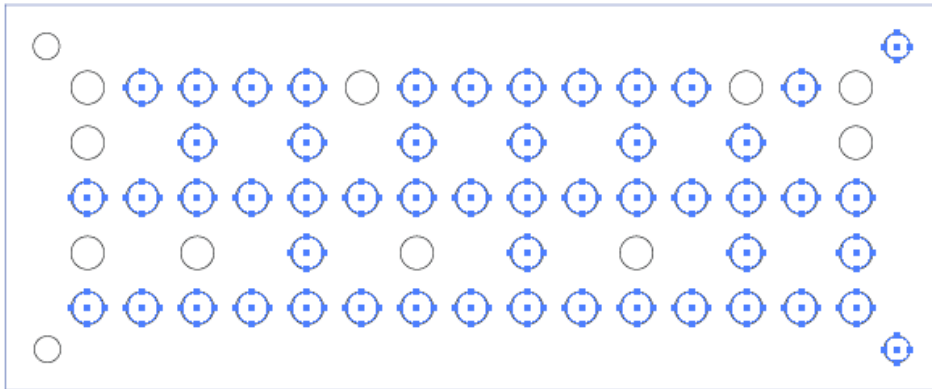
1. Navigate to the folder ** and open the file “5x15LegoBoardTemplate.ai” with Adobe Illustrator.
2. Compare your finished **working** clock with the template, and take note of any holes on the face that your clock wont need.
3. Before you start, make sure:
 - ✓ Your clock is finished and working.
 - ✓ You have **taken a picture** of your clock to help you re-assemble it.
 - ✓ You have done a **final sketch** of what your clock face will look like.
 - ✓ Your diagram should indicate which lines will be **cut** and which will be **engraved**.
 - ✓ Your design leaves the **bottom edge** of your clock **unchanged**.
 - ✓ You **know which holes** on your Lego Board are being used by shafts of your clock.

4. Click the **Selection Tool** (or press V).



5. Select all the holes that aren't being used on your board. To select more than one of these circles at once, hold the *Shift* key.

You should have something that looks like this:



6. Press the *Delete* Key to **delete these holes**.
7. **Double-check that you didn't delete any holes that you need for your clock!!** If you did, press *Cmd+Z* to undo and try again.

You should now have something that looks like this, except that yours will have different holes left, depending on your clock's design.



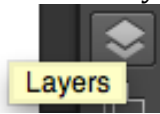
Part 2 – Using Layers and the Pen Tool to Create a Custom Face

This is part of the assignment where your creativity is the limit! This guide will serve as an example of what I did to help you get started, but illustrator is an extremely powerful program that you are free to explore!

Keep these guidelines in mind as you are working:

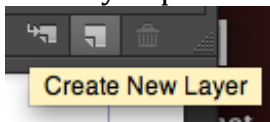
- ✓ All of your designs should be done with the Pen Tool. This creates a flexible, editable *path*, which you can change later if you need to.
 - ✓ Don't *fill* (shade in) any regions of your design – all of your art needs to be lines, *strokes* (outlines), and curves.
 - ✓ You can always use Undo if you make mistakes!
-

8. Click the Layer's button to show the layers in your current project.



9. *Double-click* the name of “Layer 1” and rename it to something like “Original Face.”

10. Create a new layer. Give it a name that describes the outline of the clock, like “Stanley Cup Face”



11. I've decided that the bottom, left, and right edges of my clock face will stay the same as the template.

Select those edges using the select tool, and copy them (Cmd+C). Making sure you have the new layer selected in the Layer organizer, paste these edges into the new layer (Cmd+V).

12. You can show/hide layers by clicking the visibility button for that layer.



Hide the original face to check that you have copied your edges correctly.

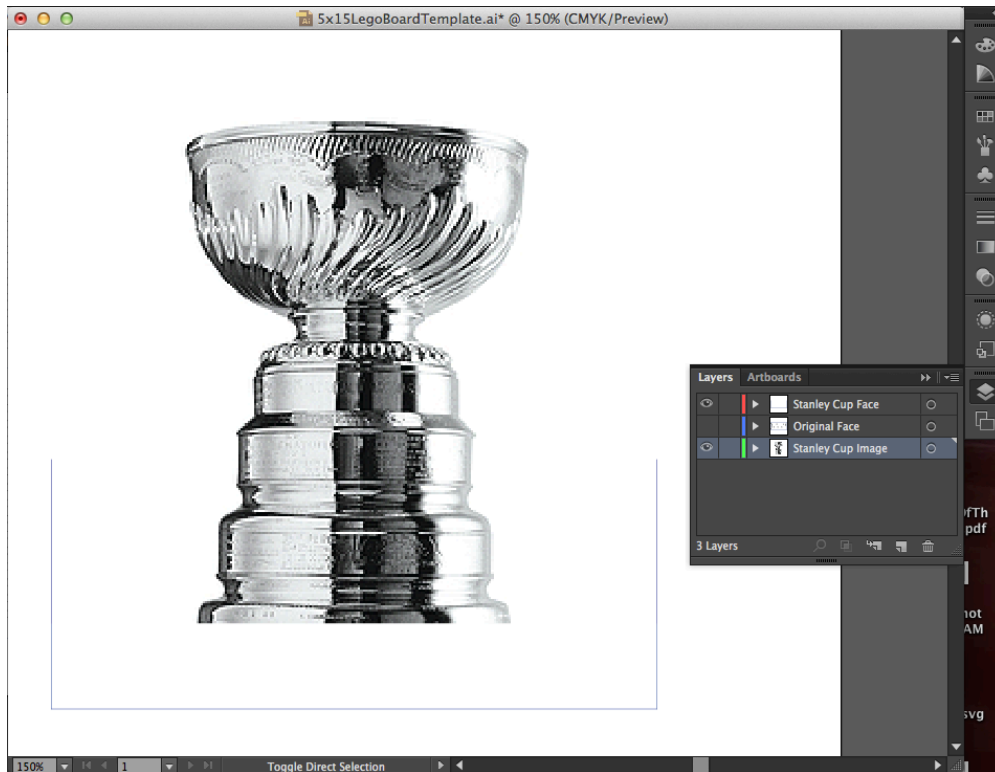
Mine looks like this:



13. I created the Stanley Cup shape by tracing an image I found online. Let's look at how to do that step-by-step.

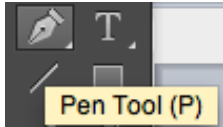
Create a new layer, and drag it to the bottom of the list of layers. This puts it at the back so that the other layers show on top of it. Name your layer "Stanley Cup Image."

14. With this layer selected, *drag the image* into your project. It will be copied into the current layer. Using the **Selection tool**, drag it into position like this:



15. Select the *Stanley Cup Face* layer. This is the layer where we will draw in the new outline for the face.

16. Select the **Pen tool** from the left toolbar (or press the P key).



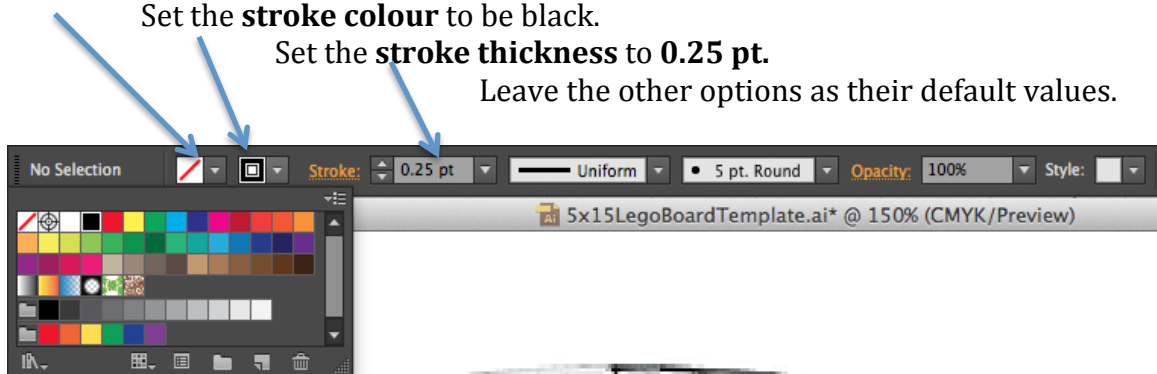
17. The top bar will now show the attributes of the Pen tool. Set these attributes:

Leave the **fill colour** as empty (the red / symbol means “no colour”).

Set the **stroke colour** to be black.

Set the **stroke thickness** to **0.25 pt**.

Leave the other options as their default values.

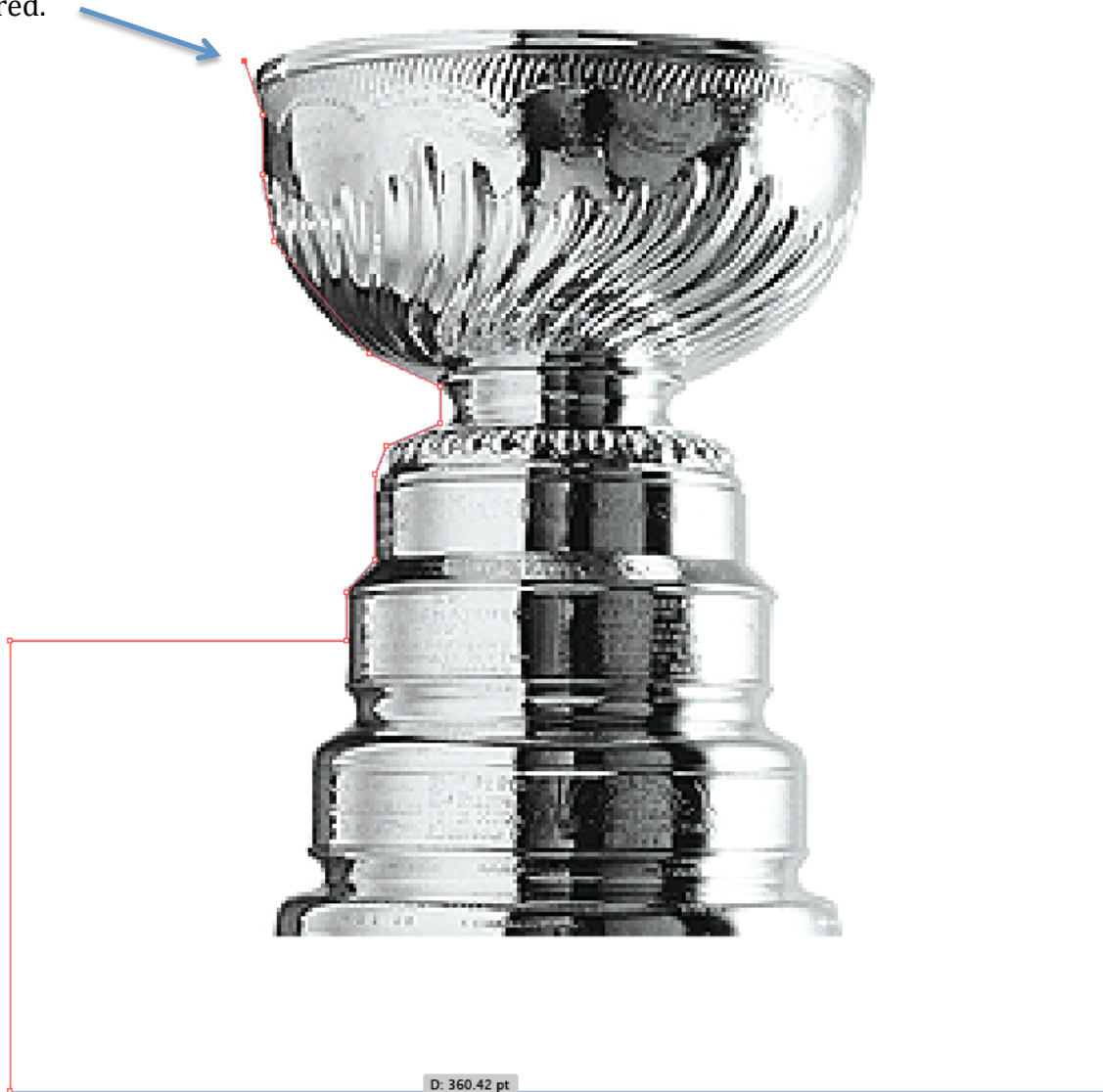


18. With the pen tool selected and the attributes set, Click on the top-left anchor point of the face:



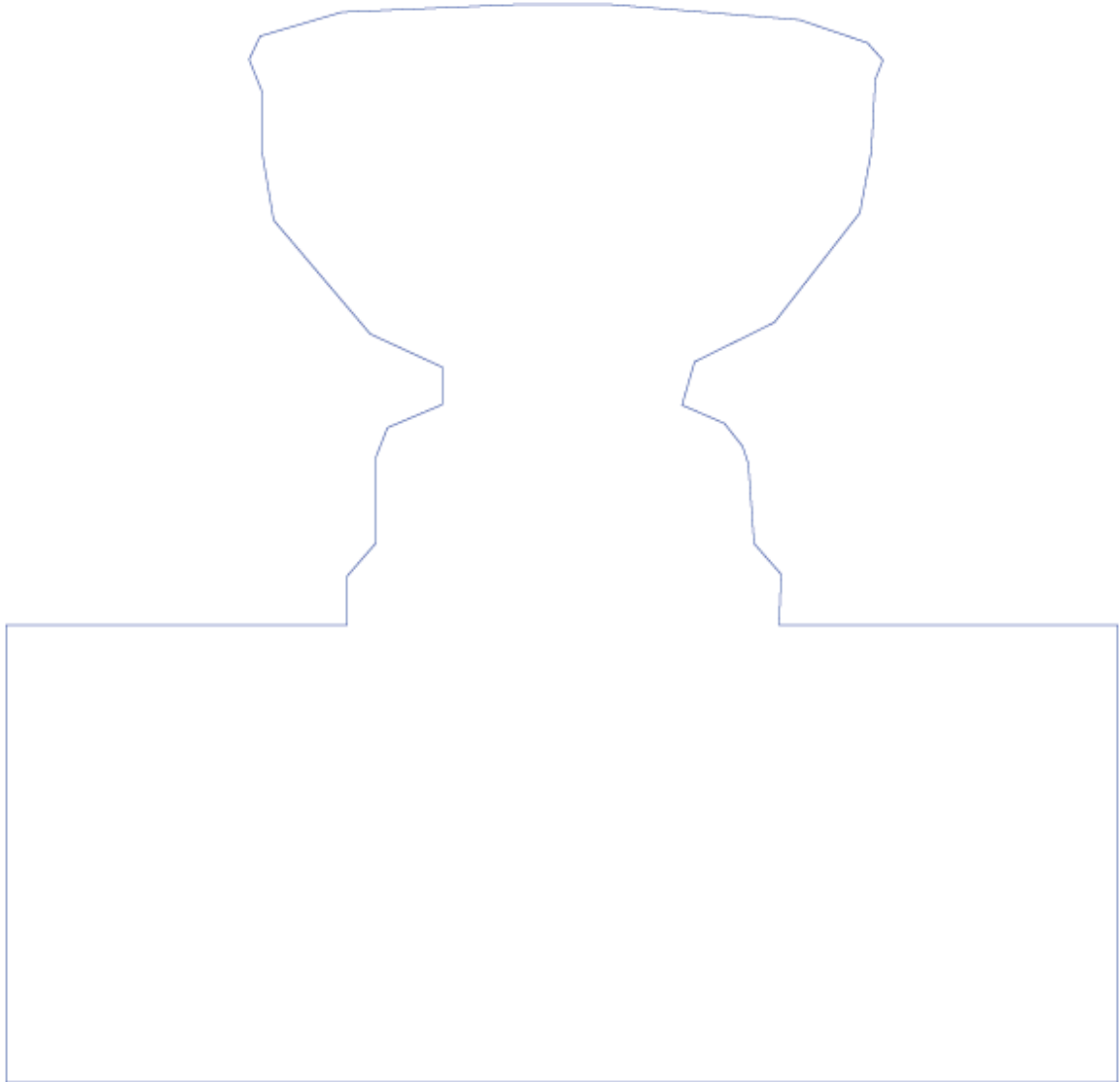
19. The pen is now anchored to that corner. **Trace the shape** of the Stanley cup and the pen will connect all the points you click to make a **path** of connected line segments.

Here's what it looks like when the path is almost half-done. The path is shown in red.

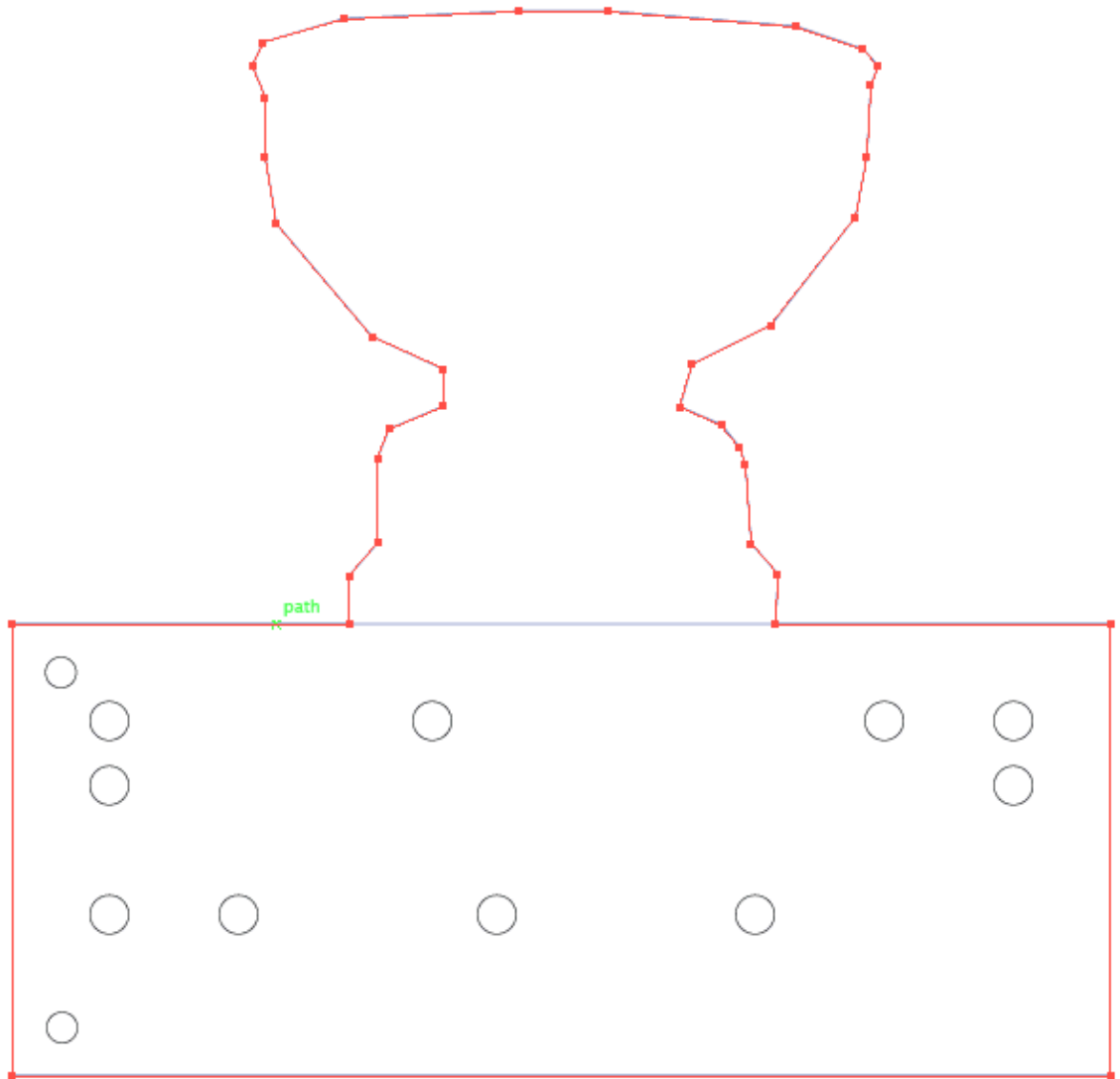


20. When you get to the end of the path you wanted to trace, make sure you connect the last anchor point to the top-right corner of the face template.

Hide the Stanley Cup image layer and you should have something that looks like this:



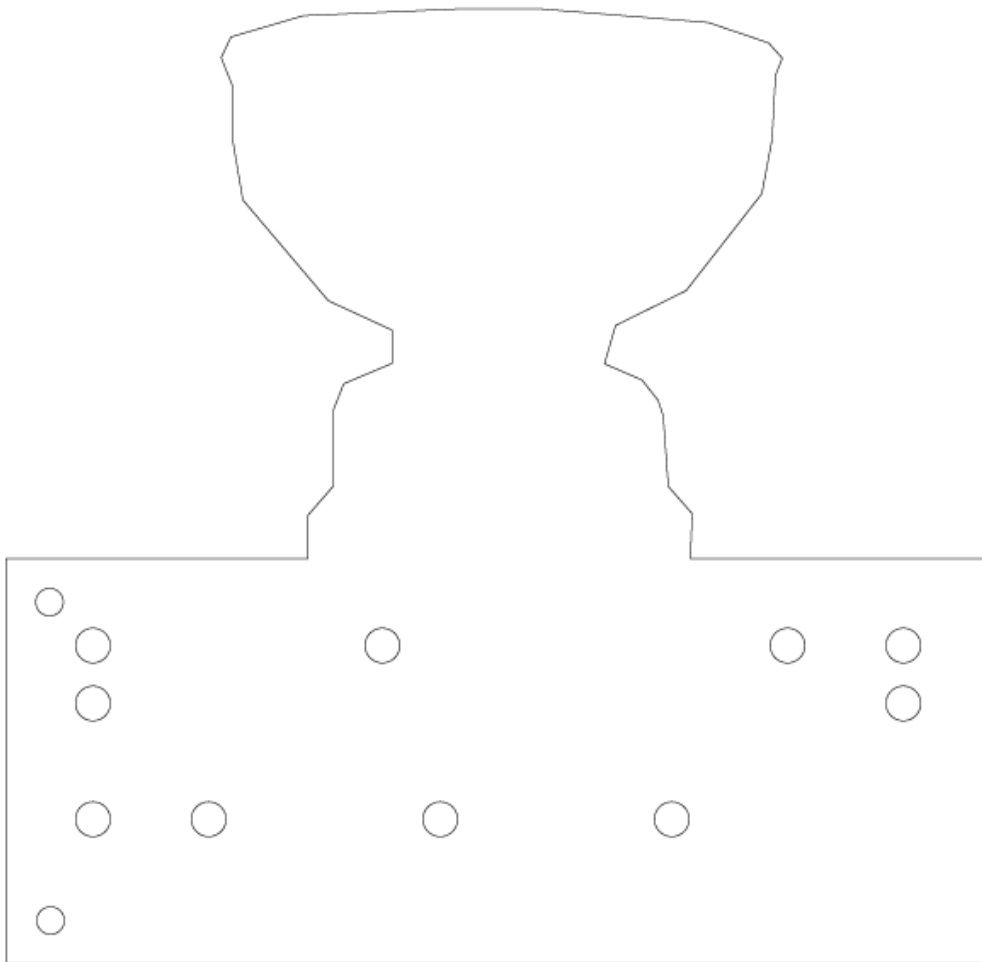
21. In the **Layers panel**, make the *Original Face* and *Stanley Cup Face* layers visible. **Drag** the path you just made so that the bottom, left, and right edges line up with the edges of the *Original Face*.



22. You should now see the holes you decided to keep, arranged on your custom face shape.

Hide the *Stanley Cup Face* layer, and **delete** the paths around the **edge** of the *Original Face* so we don't have them doubled in our final file.

Show the *Stanley Cup Face* layer again and we should be able to see all the parts of our face that will be **cut** with the laser cutter. **Make sure these are all black.** If not, select the paths and change the stroke colour (see step 17 if you forget how to do this).



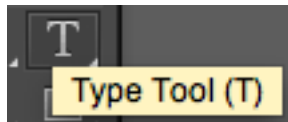
Part 3 - Adding Text Labels for Laser Etching

To finish my clock I decided there were a few things I wanted to add:

- (1) A name: I called mine the “NHL Game Clock”;
 - (2) Labels for the hands: I labeled times and added hash-marks to make the clock’s hands easier to read;
 - (3) Decoration: I added lines across the levels of the cup to make it look better!
-

23. Let’s **add a new layer** for all the things we want to etch. I’ll call mine “*Etching.*”

24. To add the words “*NHL Game Clock*” at the top, select the **Type tool**, and click in the place where you want to place the text.



Again, set the fill colour to be empty.

Set the stroke colour to be **red**.

Set the stroke thickness to be 0.25 pt.

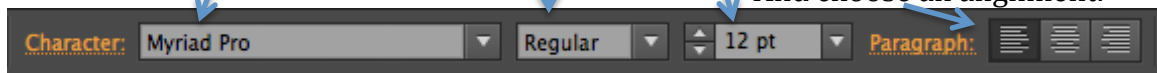


Then choose a font.

Decide if you want **bold** or *italic*,

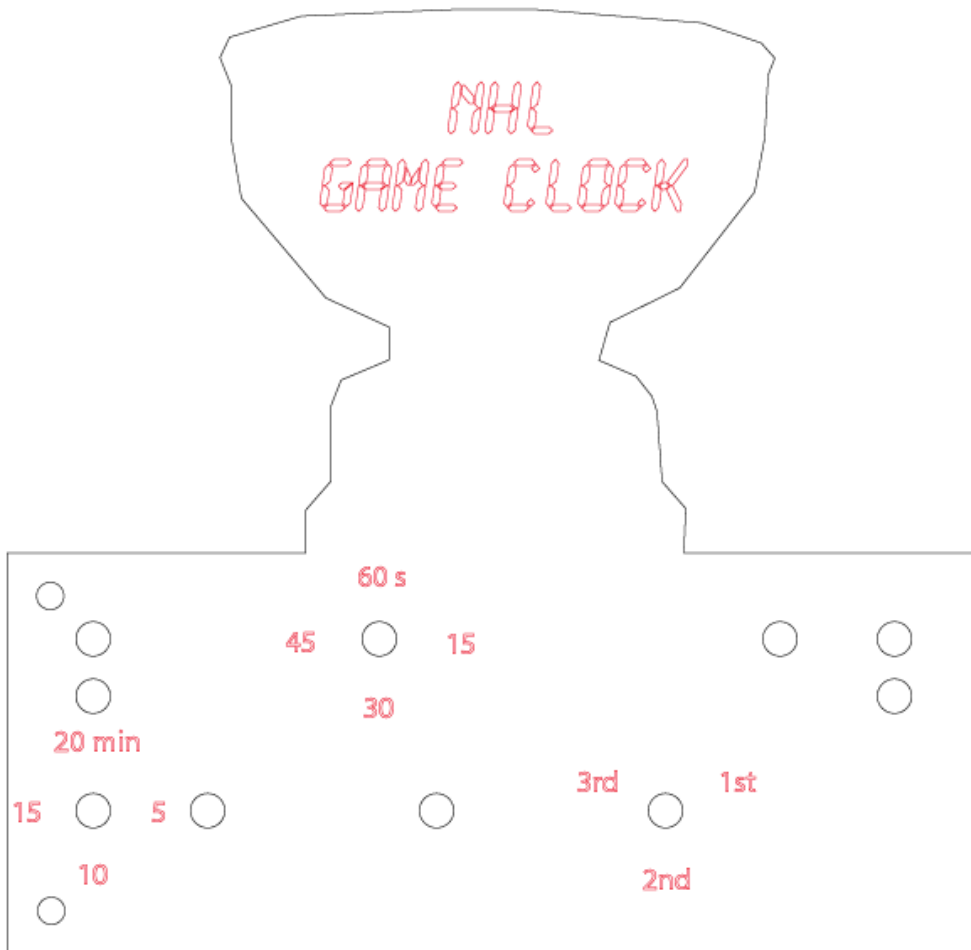
Set the **font** size,

And choose an alignment.



Type your text, then press *Cmd+Enter* to finish.

25. You can add labels for the hands the same way. Once you've done that you should have something that looks like this:



Part 4 – Adding Lines and Curves for Etching

26. To add the rest of the decorations we will use the **Line Segment tool** and the **Arc tool**.

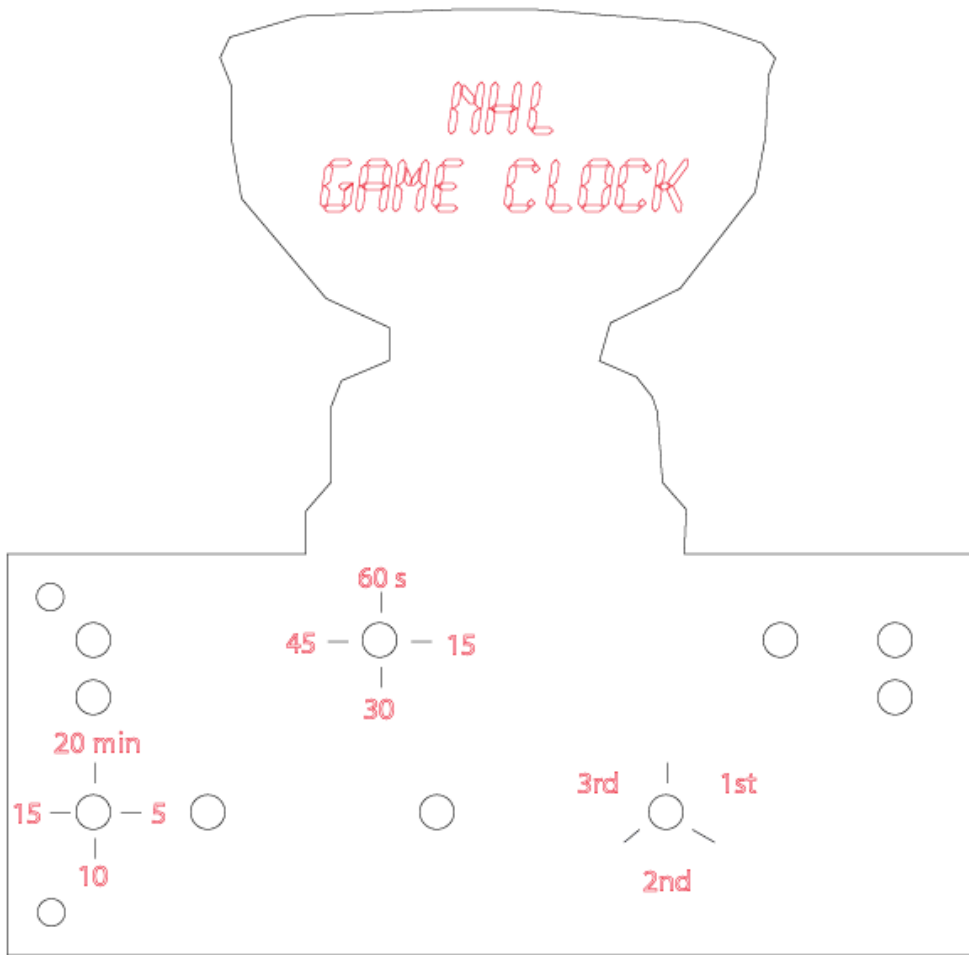
Select the Line Segment tool:



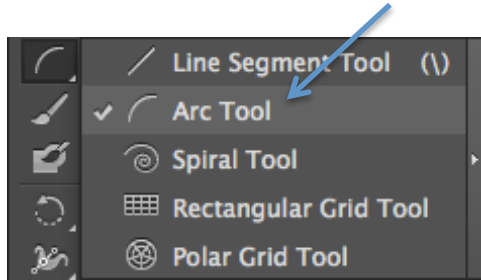
Click and Drag to create straight line segments.

If you want these lines to be exactly horizontal, vertical, or on a 45° angle, hold *Shift* as you create the lines.

Here's what I ended up with:

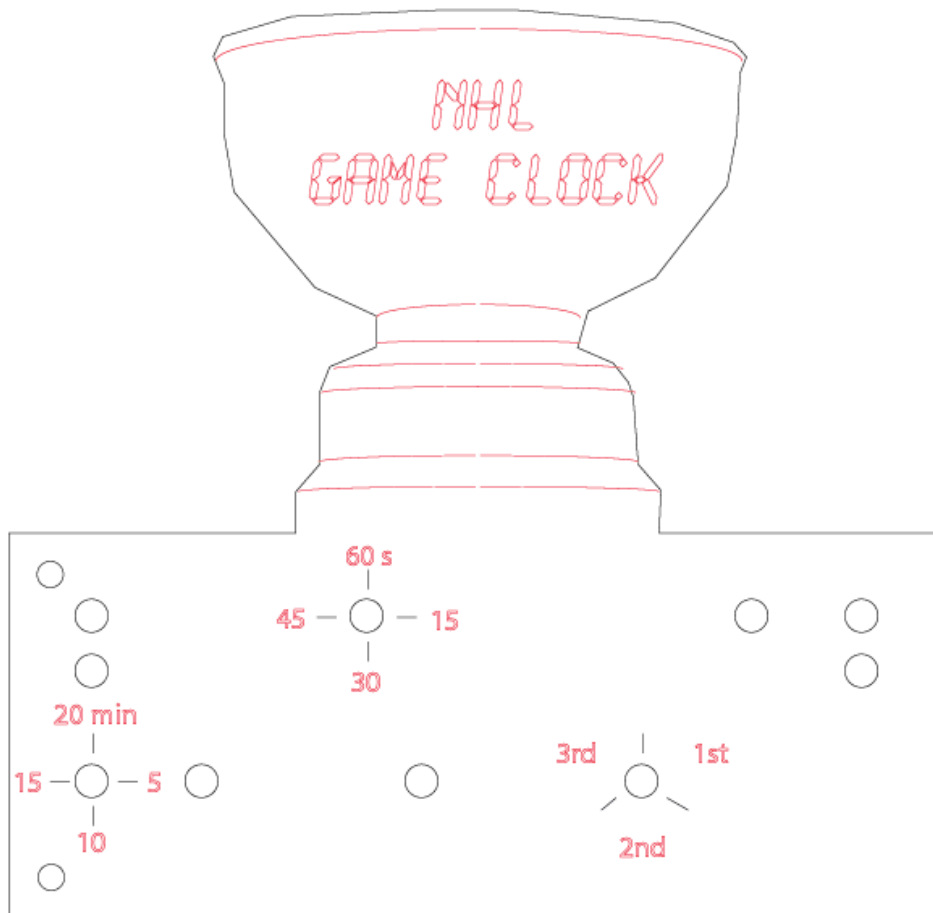


27. Now lets add some arcs. To select the Arc tool, **click and hold** the **Line Segment tool**, then choose the **Arc tool**.



28. **Click and Drag** to create arcs that fit the shape of the Stanley Cup and give it a sense of dimension.

When everything's all done, make sure you set the layers that you want to see to be *visible*, and you'll have something like this:



If you've done your own clock face design, let's check that you're ready to cut it:

- ✓ The lines to be cut are coloured **black**.
- ✓ The lines to be etched are coloured **red**.
- ✓ You haven't missed any holes needed for your clock design.
- ✓ All of your **lines' thicknesses** are set to 0.25 pt.
- ✓ You've saved your face as an Adobe Illustrator (.ai) file, clearly identifying **your name** in the file name.

"I want to learn more!"

There are tons of amazing resources online to help you learn more about Adobe Illustrator and the whole Creative Suite package. I would suggest starting on YouTube and just searching for something like "illustrator tutorial" and see if you're interested by anything that comes up. Follow along and learn about the other tools. That's how I learned!

One more thing:

Have fun!