

Gravit Box Design

Due: 4th period: Thursday 9/17/20 midnight

3rd and 7th periods: Friday 9/18/20 midnight

Today we're going to design five sides of a box. Please follow the instructions closely. As usual, [I have made a video that walks you through it if that helps.](#)

1. Create a new Gravit document (8.5 x 11 US Letter Portrait sized paper). Save it, name it "Box".
2. Draw a rectangle. Set its W to be 3.3 inches and its H to be 2 inches.

Size

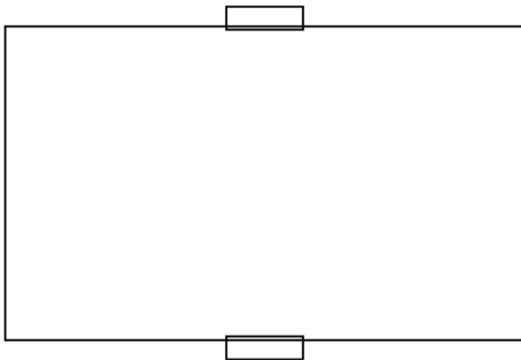
W 3.3



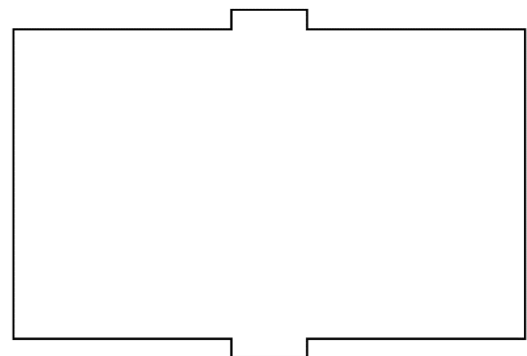
H 2

Throughout this whole document, every time I ask you to create a rectangle, please turn off the fill and turn on the border. All of my pictures will show my rectangles with Fill off and Border on. Leave the border at 1 pt.

3. Create another rectangle. Make this one have a W of .5 and a H of .16 inches. That is point 5 and point 1 6, not 5 and 16.
4. Duplicate this small rectangle. Put one at the top and one at the bottom of your box as shown below.
5. Use the Align Center toolbar button to center the little boxes on the big box. Make sure the little boxes just barely overlap the big box like this:

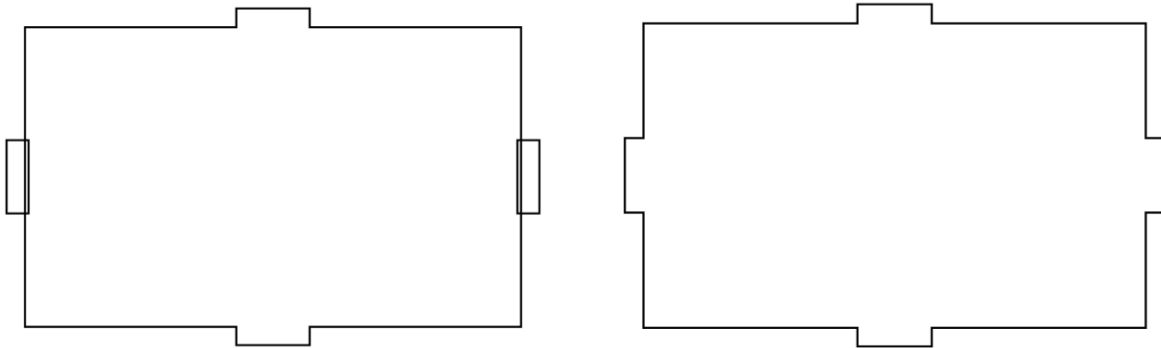


6. Choose Union under the Create Compound Shape toolbar button. You should have something that looks like this now. If the top and bottom rectangle tabs are not centered, undo the Union, use the Align Center tool, and try again.



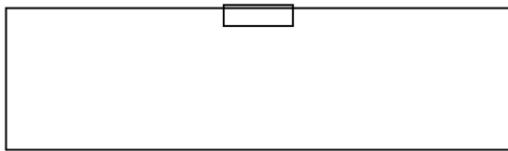
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7. Create a new rectangle that is .16 wide and .5 tall. Duplicate it, and put one on each side of the shape you just created. Use the Align Middle toolbar function to get them aligned. Line them up so that the new rectangles are barely overlapping. Then do the Union function again.

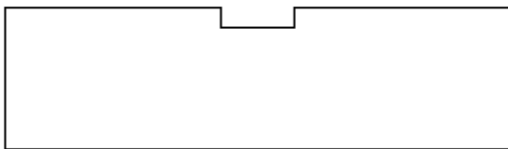


This shape will be the bottom of the box.

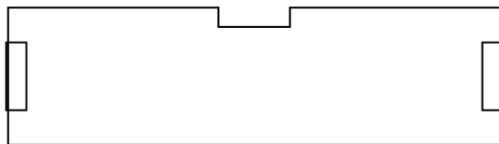
8. Draw a new rectangle. Make this one 3.5 inches wide and 1 inch tall. Create a smaller rectangle, make it .5 wide and .16 tall. Place it in the center of the larger rectangle. Use the Align Centers tool to make sure it is centered. Make it sit inside the larger box like this:



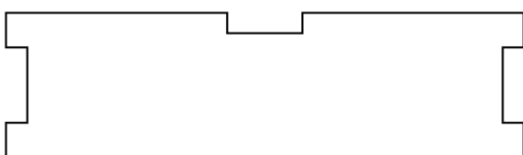
Then do Subtract under the Create Compound Shape menu to get this:



9. Create a small rectangle that is .16 wide and .5 tall, duplicate it, and place one on each side of this new shape like this:

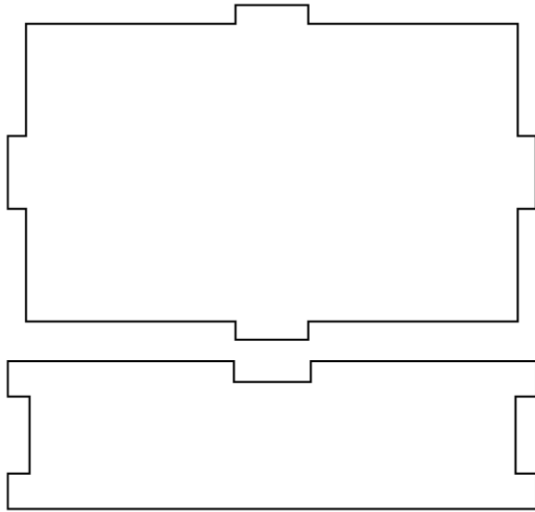


Then do the Subtract function to get this:

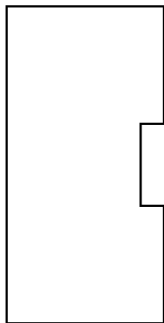
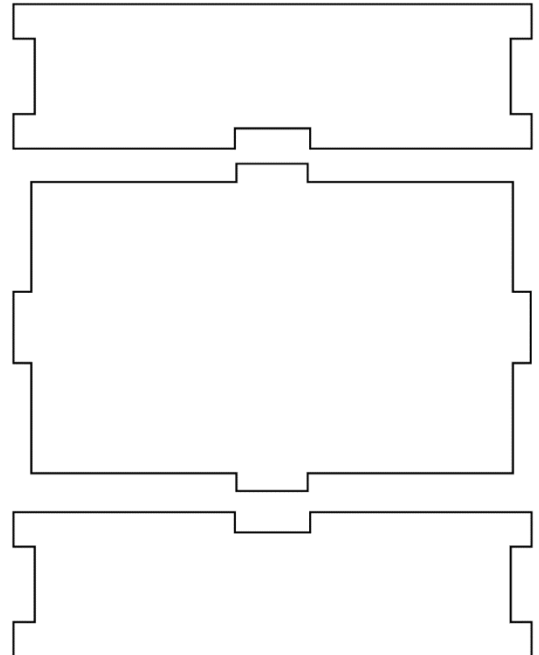


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10. Make sure you did this correctly. You should now have the following two pieces:

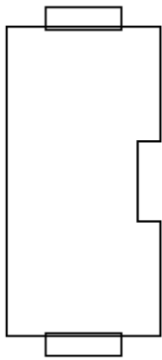


11. Select both pieces you made and choose Convert to Path.
12. Duplicate the bottom piece, flip it vertically, and place the copy above the big piece so that it all looks like this.
13. Create a new rectangle that is 1 inch wide and 2 inches tall. Create a smaller rectangle that is .16 wide and .5 inches tall. Place it inside the right side of your new larger rectangle, center it vertically using the Align Middle button, then do the Subtract function. You should get this:

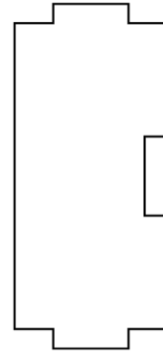


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14. Create another small rectangle that is .5 inches wide and .16 inches tall. Put one on the top and one on the bottom on the OUTSIDE of the new object, center them using Align Centers. You should get the following:

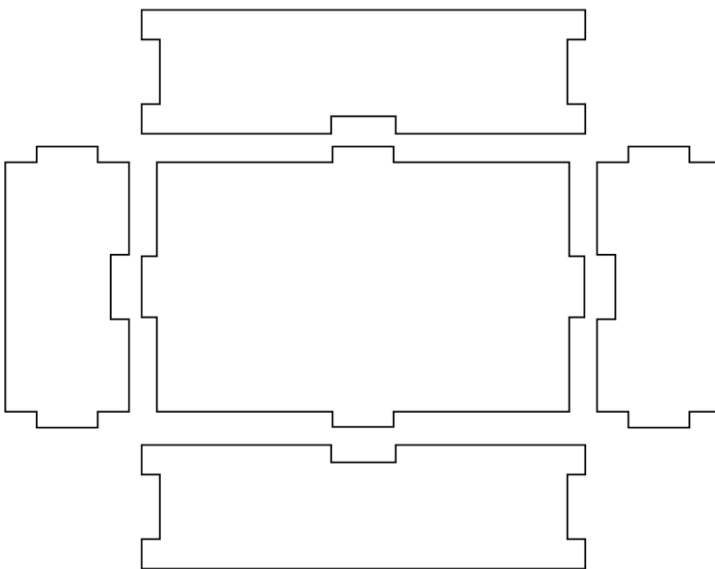


Then, select all three shapes and do a Union to get this:



15. Selecting this new shape, click Convert to Path.

16. Duplicate this new shape. Flip it horizontally and arrange your pieces like this:



17. Write your name with the text tool and place it in the middle of the box.

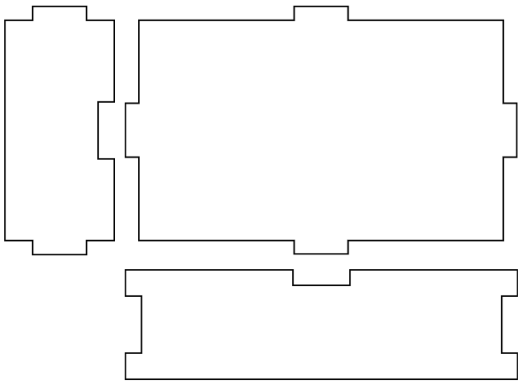
18. That's it! You've made a box. When we have access to the laser cutter we will cut it out of wood and hot glue it together to make a box.

Save, and turn in a Share link on the Google Classroom.

For an extra credit project, go to the next page.

We can import Gravit designs into Tinkercad. If you prepare things correctly you can export from Gravit and then import into Tinkercad and then move the pieces around to actually build the box!

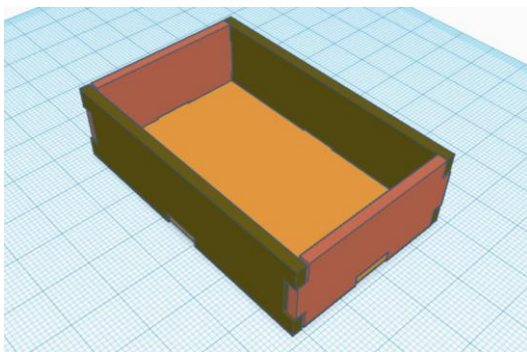
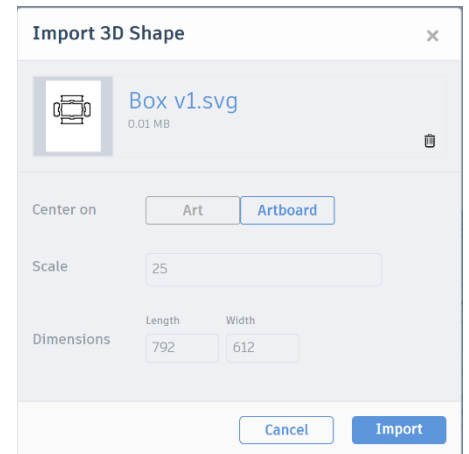
1. Make a copy of your project (Save to Cloud as...)
2. In the copy, remove the top shape and the far right shape. You should be left with these shapes:



3. We want to export one each of these shapes. Carefully delete two of these shapes but do not save your changes. For my purposes I'm going to say we're deleting the biggest shape and the one on the bottom. Choose Export from the File menu and export to a Scalable Vector Graphics (svg) file.
4. Now undo the deleting of the two objects. Delete the biggest shape and the far left shape this time. Export again to svg.
5. Undo the deletions again. This time delete the two smaller shapes, leaving only the big shape. Export to svg.
6. Close this Gravit document. Go to Tinkercad. Create a new project. Click the Import button. You get a window like this over to the right.

Set the "Scale" setting to 25 (the default is 100). Click Import.

7. Change the height of the imported object to be 2mm. Import the other pieces.
8. Duplicate and arrange them to make the box like this:



To get the extra credit, email me a Share link for this along with your svg files.