3d arm project
Make 1 and Make 2
Due Tuesday 1/25
Due Wednesday 1/26

You, with two other students, will be making a 3D printed arm with three parts that screw together. One part will be attached to the wall, one will connect the first and third, and the last part will hold a little wooden sign that has your names on it.

I assigned you groups. The group assignments are on the last page of this document.

Please find these people, and decide who will do which part. If someone is absent, those of you who are present will decide who will do which piece. If you are the only person present for your group, you decide who is doing which piece. <u>Whoever is present needs to email whoever is not present to tell them which piece they are doing.</u>

The piece you make will give you a chance to show some creativity, plus it will feature the first letter of your name.

Once you know which piece you are doing, go to that page:

- The wall piece: go to page 2

- The middle piece, go to page 3

- The end piece, go to page 4

Finally, as a group, sit around one computer and make your wooden sign that will slip into the slot on the end piece. The sign must be 5 cm square and have your three names on it, plus some interesting graphic. Do this together, then name the file with your three names in the title, and email it to the laser cutter address.

Now… go to the page for the piece you have to do. Stay in touch with your group members.

In the off chance that someone in your group is missing a bunch of school, don't stress, just come talk to me about it. We'll make it work.

You must turn in the STL files and send them to the 3D printer email address by the due date to get full credit. We may not be done printing them by then, but you need to be done with the design effort by then.
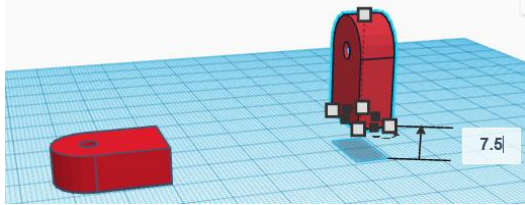
Good luck!

Instructions for wall-attaching piece.

Start with your 3d arm part 1 piece. In Tinkercad in the main window when you come in, mouse over your project, click on the gear icon, and click Duplicate.

Rename the duplicate with your name and "3d arm".

Open the project. Make a copy of the piece, flip it vertically, and raise it 7.5 off the workplane like this:
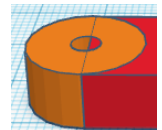

Select all and check the distance from far left to far right. It needs to be 72. Adjust things until it is. Make sure the pieces are aligned.
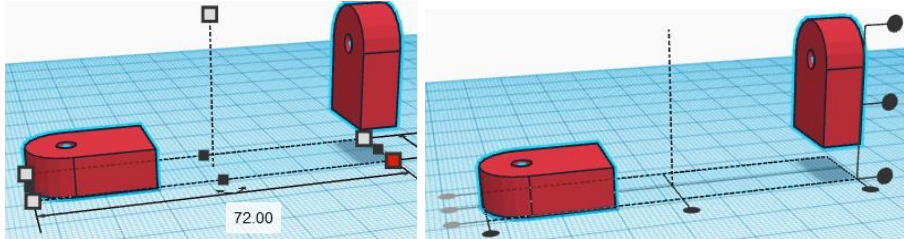
Now, leaving the areas around the holes clear, you need to connect the left side with the right side. You can do this any way you want while including the first letter of your name. You can use cylinders, spheres, boxes, or multiple copies of your letter even to make sure the left and right pieces are connected.

The project must stay within 31 height, 15 width, and 72 length. I'm not showing you an example because I want you to make your own thing, not a copy of what I did.

Do not put any part of your connecting things or your letter into the round space surrounding either hole. See the image to the right. That area needs to be open so that we can attach your arm to a piece made by someone else in your group on the left and the wall on the right.

Some tips:

It is good to avoid having a bunch of stuff up floating above the workplane. You should fill in the gap below the far right piece so that it extends down to the workplane. Anything that is raised up makes the 3D printer print scaffolding which takes more time and then makes your final project less pretty (because we have to break the scaffolding off with pliers.)

Also, no part of your project can be BELOW the workplane. When you have everything the way you like it, group everything into a single object.

Call me over to check you off before you send it to the 3D printer. After I check you off, export as an STL file, then send that file to the 3d.makerlab@wscuhsd.org email address, and tell me you're ready to print. Turn in the STL file on the Google Classroom (not a share link, turn in the STL this time.)

Instructions for middle piece.

Start with your 3d arm part 1 piece. In Tinkercad in the main window when you come in, mouse over your project, click on the gear icon, and click Duplicate.

Rename the duplicate with your name and "3d arm".

Make a copy of the 3d piece you made the other day. Flip the copy around so it faces exactly in the other direction, then move it 7.5 up from the workplane like this:
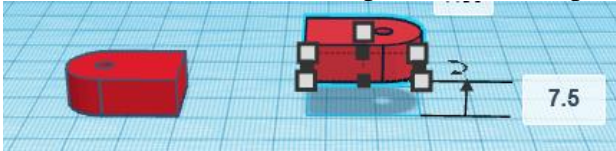
The original must be on the workplane, and the copy must be over to the right 7.5 above.

If you select all, the distance from the far left to far right needs to be 72 exactly. Make sure the pieces are aligned.
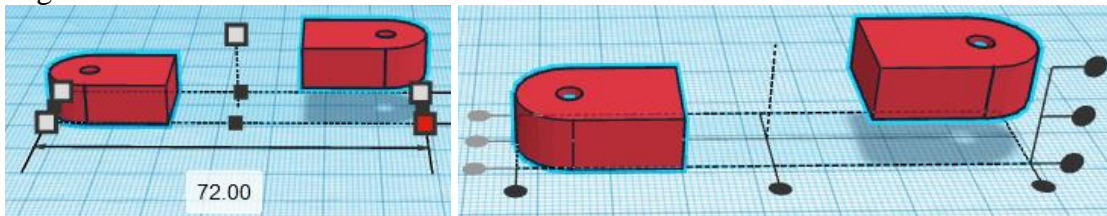
Now, leaving the areas around the holes clear, you need to connect the left side with the right side. You can do this any way you want while including the first letter of your name. You can use cylinders, spheres, boxes, or multiple copies of your letter even to make sure the left and right pieces are connected.

The project must stay within 15 height, 15 width, and 72 length. I'm not showing you an example because I want you to make your own thing, not a copy of what I did.

Do not put any part of your connecting things or your letter into the round space surrounding the hole. See the image to the right. That area needs to be open so that we can attach your arm to pieces made by your group members on each side. (This is the middle piece after all).
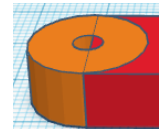
Some tips:

It is good to avoid having a bunch of stuff up above the workplane. Sure, the far right piece has to be up off the work plane, but all the stuff in the middle should generally stay on the work plane. Anything that is raised up makes the 3D printer print scaffolding which takes more time and then makes your final project less pretty (because we have to break the scaffolding off with pliers.)

Also, no part of your project can be BELOW the workplane. When you have everything the way you like it, group everything into a single object.

Call me over to check you off before you send it to the 3D printer. After I check you off, export as an STL file, then send that file to the 3d.makerlab@wscuhsd.org email address, and tell me you're ready to print. Turn in the STL file on the Google Classroom (not a share link, turn in the STL this time.)

Instructions for end piece.

Start with your 3d arm part 1 piece. In Tinkercad in the main window when you come in, mouse over your project, click on the gear icon, and click Duplicate.

Rename the duplicate with your name and "3d arm".

Open the project. Drag over a box piece. Make it 15 by 15 by 15. Make the pieces so that they are 72 from left to right. Align them.
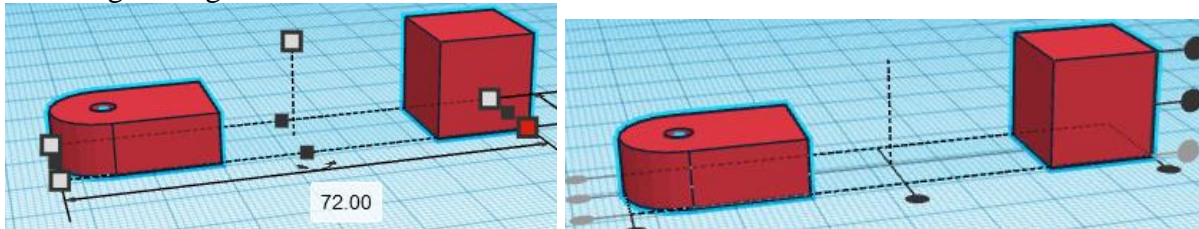

Raise the left piece (with the hole) so that it is 7.5 above the workplane.
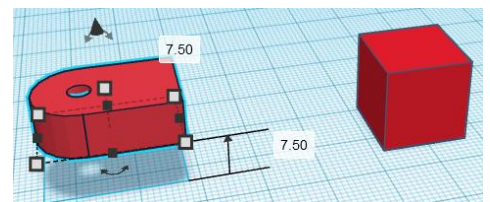
Now, leaving the area around the hole in the left piece clear, you need to connect the left side with the right side. You can do this any way you want while including the first letter of your name. You can use cylinders, spheres, boxes, or multiple copies of your letter even to make sure the left and right pieces are connected.

The project must stay within 15 height, 15 width, and 72 length. I'm not showing you an example because I want you to make your own thing, not a copy of what I did.

Do not put any part of your connecting things or your letter into the round space surrounding either hole. See the image to the right. That area needs to be open so that we can attach your arm to the middle piece someone else is making on the left side.
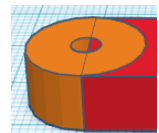
Make a hole box that is 20 by 20 by 3.2. Put it in the middle of the right hand box as shown to the right, 7.5 up from the workplane:
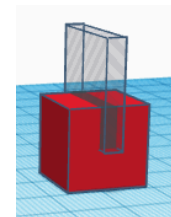
When you have everything the way you like it, group everything into a single object.

Some tips:

It is good to avoid having a bunch of stuff up floating above the workplane. You should fill in the gap below the far right piece so that it extends down to the workplane. Anything that is raised up makes the 3D printer print scaffolding which takes more time and then makes your final project less pretty (because we have to break the scaffolding off with pliers.)

Also, no part of your project can be BELOW the workplane.

Call me over to check you off before you send it to the 3D printer. After I check you off, export as an STL file, then send that file to the 3d.makerlab@wscuhsd.org email address, and tell me you're ready to print. Turn in the STL file on the Google Classroom (not a share link, turn in the STL this time.)

4th period groups	5th period groups
Diego Albor	Adrian Contreras Vargas
Jackson Carter	Branden Kirtley
Marcus Schluter	Emmett Gaberman
Alexander Grady	Shane Martin
Casshe Caldwell	Jeffrey Palk
Oli Sherwin	McLain Simpson
Cambron Nevill	Owen Brown
Ethan Unciano	Erik Clarke
Avery Bean	Jake de Souza
Kryssia Blandino	Mackenzie deLara Wells
Zoelie Kim	Madde Stanfel
Emi Hilberg	Marissa McFadden
William Voss	Paige Goodson
Richard Varville	Katherine Hartman
Jaden Brady	Iyla Kjaer
Marco Conti	Emily Maners
Nate Norris	Kaylynn Tesselaar Malcolm
Brendan Walker	Dannin Robertson
Joseph Kindle	Rocco Mitchell
David Steppling	Evan Ruddick
Wyatt Wagner	Braden Mather
Billy Medeiros	Brian Sanchez Vera
Michael Morris	River Soto
Jonathan Neider	Rylan Mancini
Logan Nunnally	Asher Smith
Bella Stikes	Josh Huerta
Victor Villarreal	Vinnie Fiorello
	Wyatt Knudtson
	Matthew Price
	Hays (or other fill in)