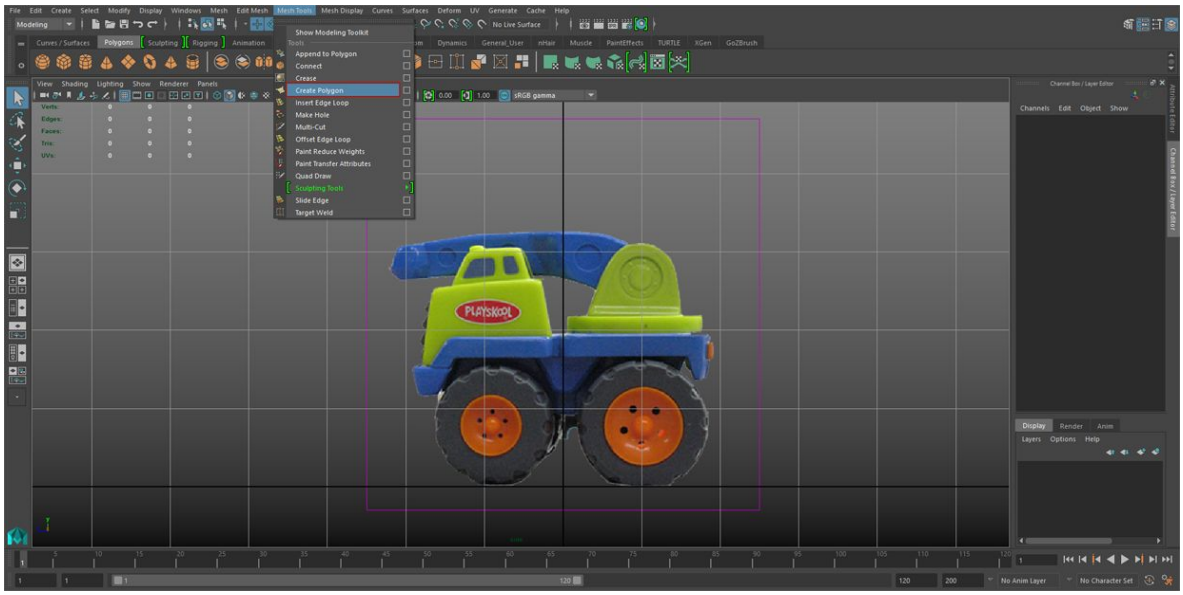
Now that the orthos are in place, we need to create the chassis.

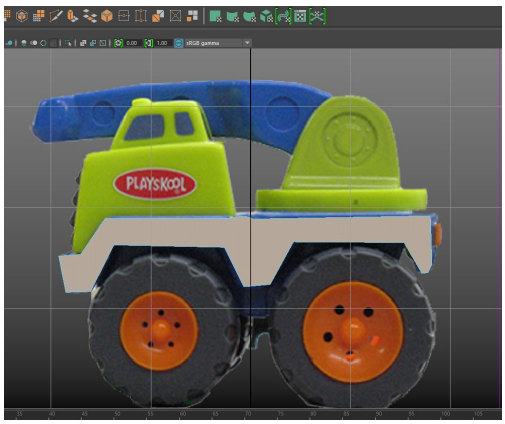
**NOTE: After going back through this PDF, I realize I reference pressing W, E, or R quite a bit. All this is doing is deactivating the current tool by activating move (W), rotate (E), or scale (R).

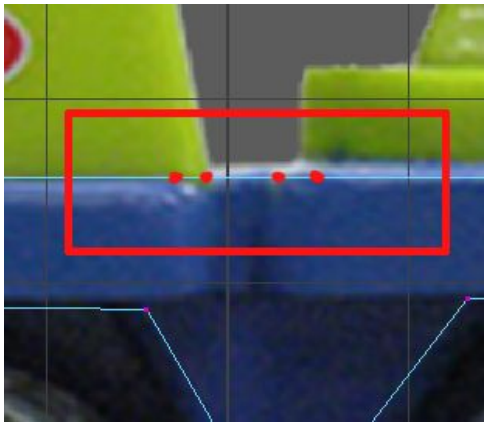
1. **Select Mesh Tools>Create Polygon.**
2. Draw the shape of the chassis using points. Each time you create a new point, that becomes a vertex for the object. Press enter after the last point is made and it will complete the shape for you. Remember that you can move these vertices after the fact so if it turns out not perfect, don't fret.

    *If the shape is black, it means that the faces are reversed. To correct this, hold Right Click and select Faces, then select Mesh Display>Reverse. (Or hold shift and right-click and select face normals>reverse normals) It is the same process we used to invert the star map on the solar system.



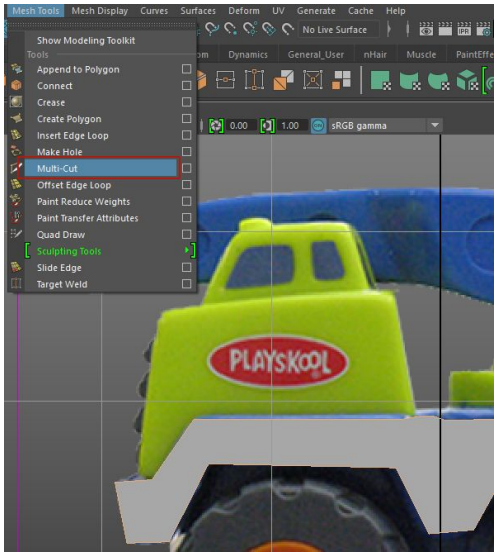
3. Once you have drawn the shape it should look something like this. You want to ensure you add the extra vertices for the portion in the middle of the chassis.



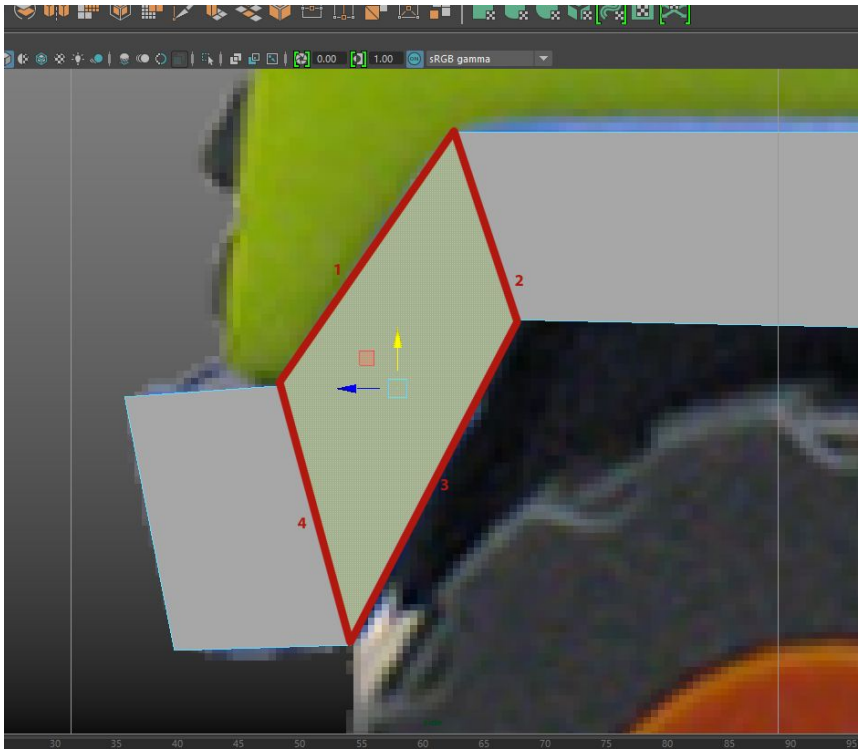


So the problem now is that we have a face that has 19 edges. Most engines will not play with any object that has more than 4 sides. To correct this issue we have to cut the face up.

4. Select **Mesh Tools>Multi-Cut**

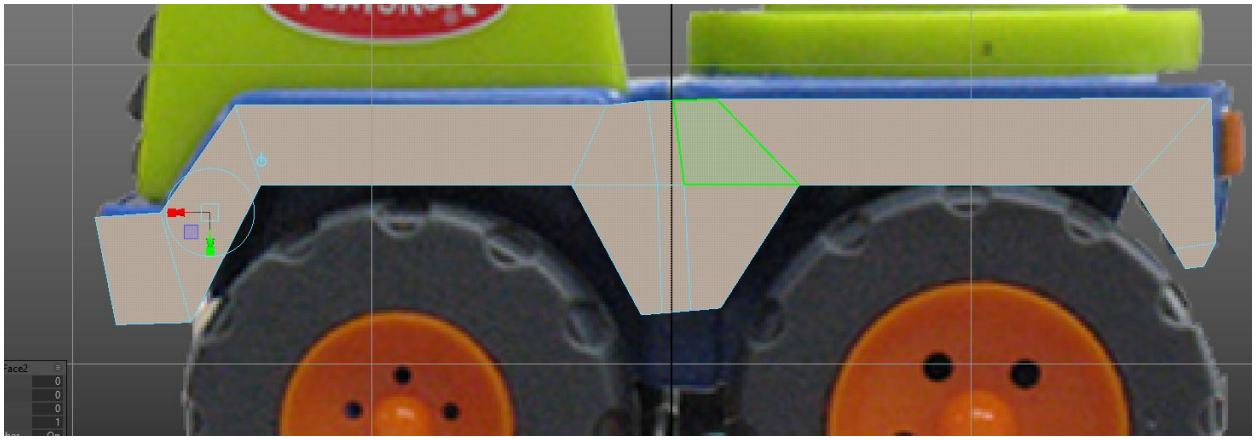


Now we are going to cut the faces to ensure that there are not more than 4 edges to any given face. While 3 edges are ok, 4 is preferred. To cut them, simply select the first vertex and then select the second vertex. This will create an edge between them. This is what I mean by 4 edges.



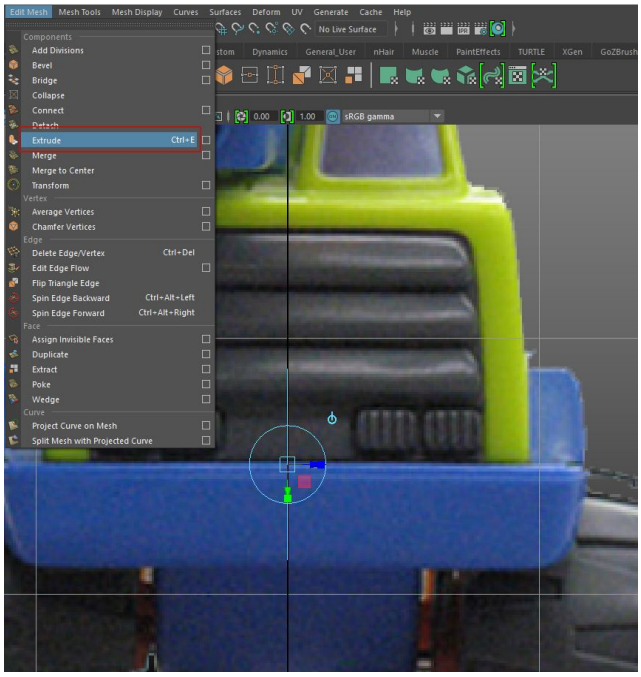
Once you cut the faces, it needs to look like this. Remember to select each vertex when cutting the edges. This will ensure that you don't make extra vertices.

Next, we will extrude our faces to create a solid 3D object. As of now, if you'll notice in the perspective window, we have created a flat 2D shape. First, you'll need to select all of the faces. Or select the object in object mode. If you choose faces, just double click the object and it will select all of them for you.

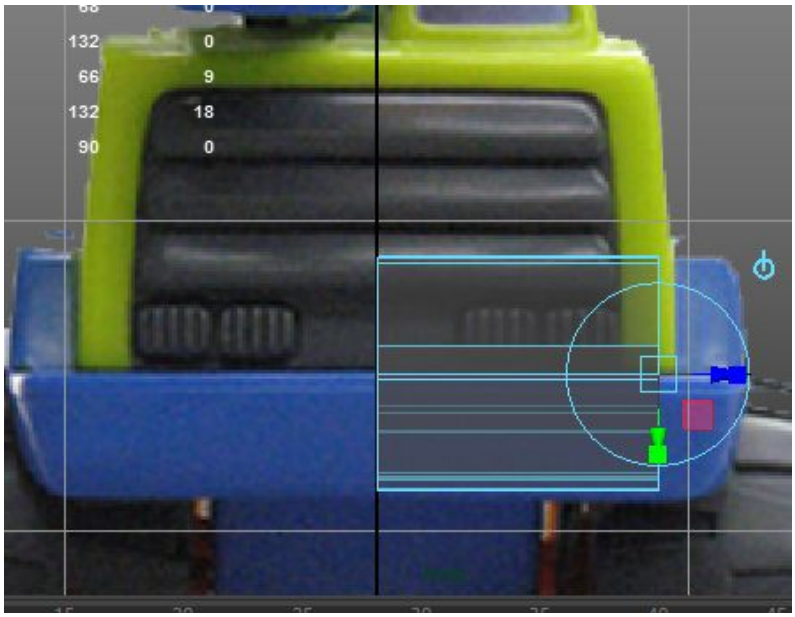


To make life a little bit easier, you should turn on x-ray mode when extruding, this will let you see through the object you are building so you can see the image behind it. To do that, just click this button  . It's located in the top menu bar of the viewport, to the right of the View menu we used to add the orthos. This will have to be turned on in each view port for it to work.

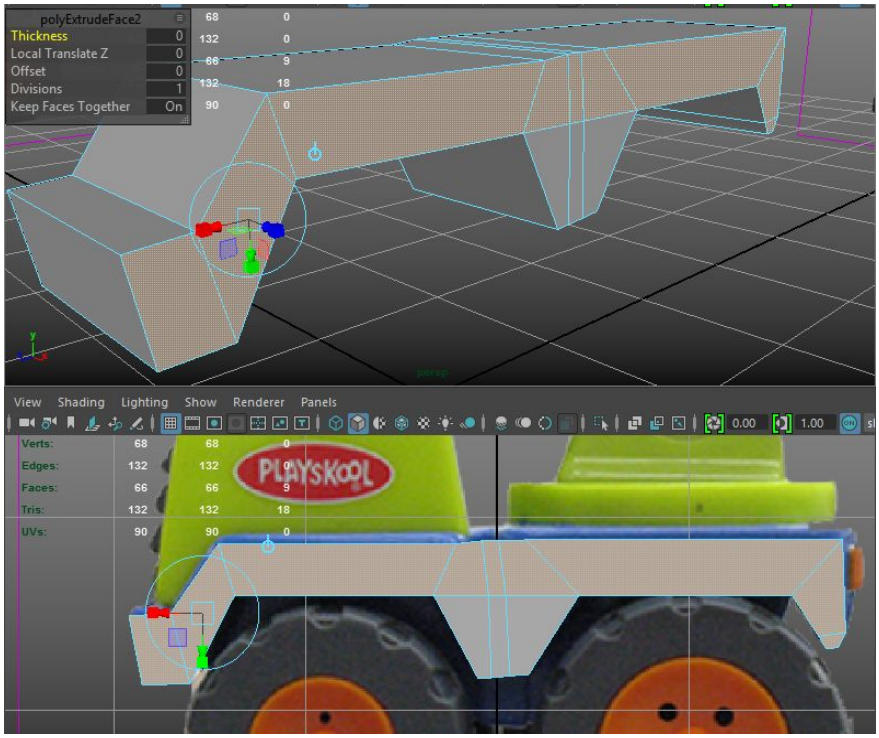
5. **EXTRUDING FUN?** When extruding for the first time with this object, you want to make sure you are in the front view viewport. This will allow you to extrude the object on the x-axis.



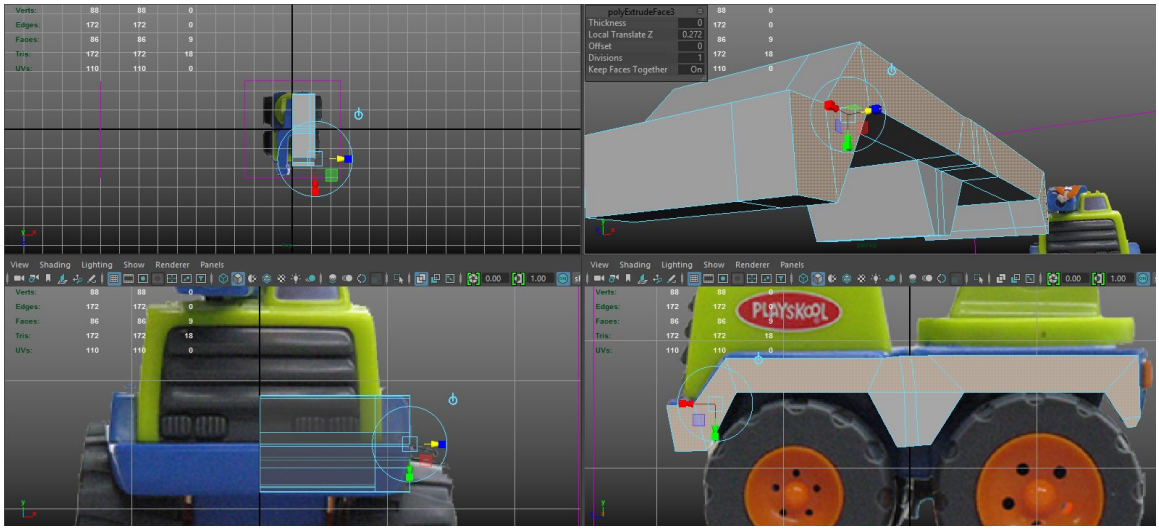
Now we are going to extrude out to the middle of the chassis with all of the faces selected. (Easier way than I did in class)



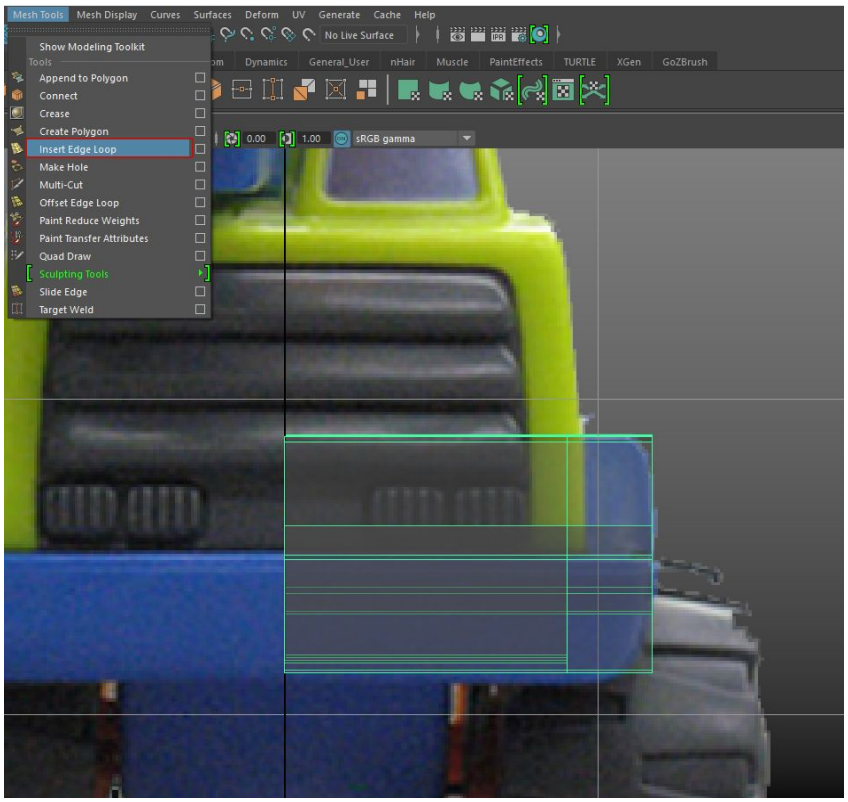
Next, deselect the bottom parts of the faces, if you'll notice, the lip of the chassis goes out further than the bottom part of that. Make sure you hit (W, E, or R) to complete the extrusion and take yourself out of the extrusion tool. You can hold CTRL to deselect the faces on the bottom. It should look something like this.



Now we want to extrude just those selected faces out a bit further to create that lip. Make sure that you re-select extrude with those faces or you will be using the same extrude as before, in other words, it won't work. These faces will go all the way to the end of the chassis.



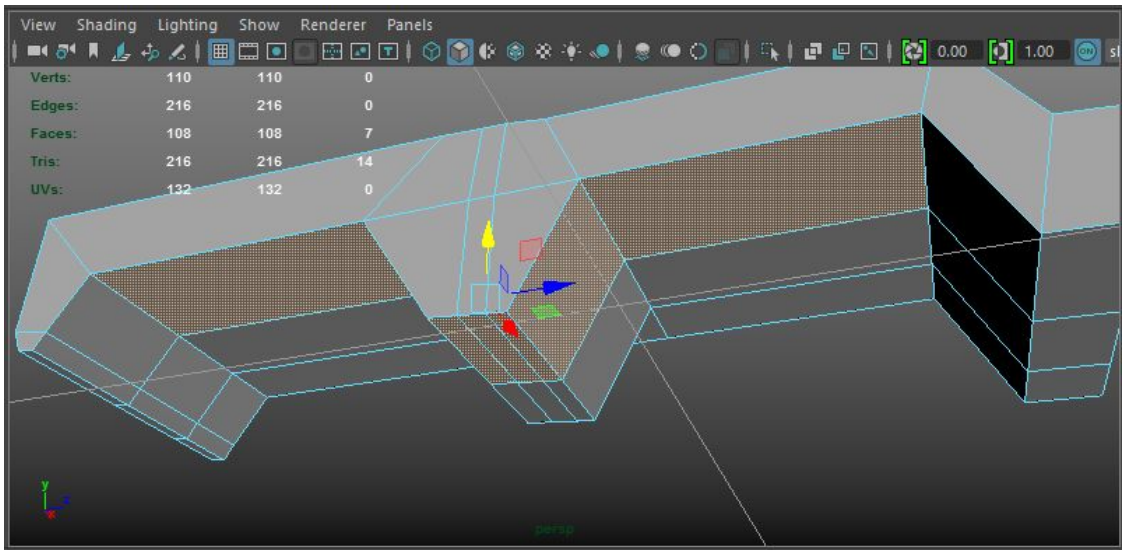
6. **Insert Edge Loop**. The difference between the insert edge loop tool and the multi-cut tool is that the multi-cut is good for cutting individual faces while the insert edge loop cuts all of the faces in the object and creates... Well, an edge loop. This is how we will create the faces needed to make the bottom of the chassis. It is under Mesh Tools>Insert Edge Loop.



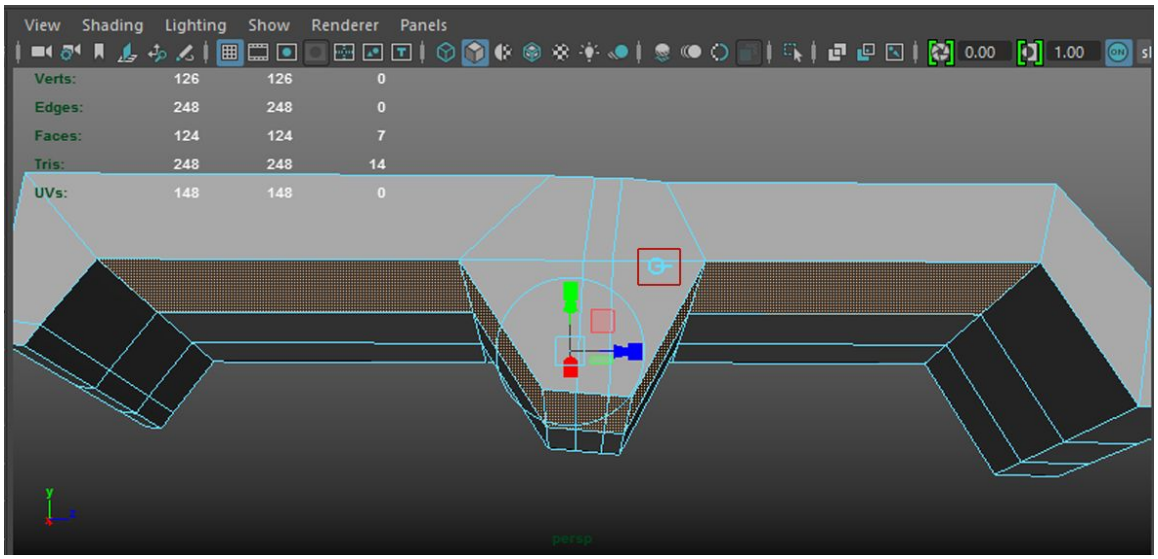
From the front view again we can use the insert edge loop tool to create a new edge that flows down the middle of the object to allow us the cut faces for the bottom. To create it, just select an edge and the line will appear. To change tools, just use W, E, or R.

7. **The Bottom of the Chassis**. We've now set up a really good way to just extrude out the bottom faces to make the part the wheels will connect to.

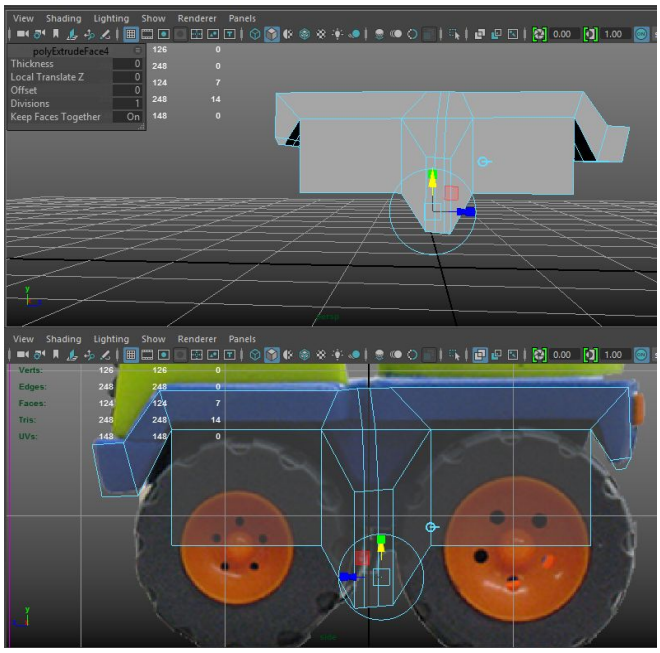
When you select the bottom faces, leave off the end pieces as they are not actually connected to that part.



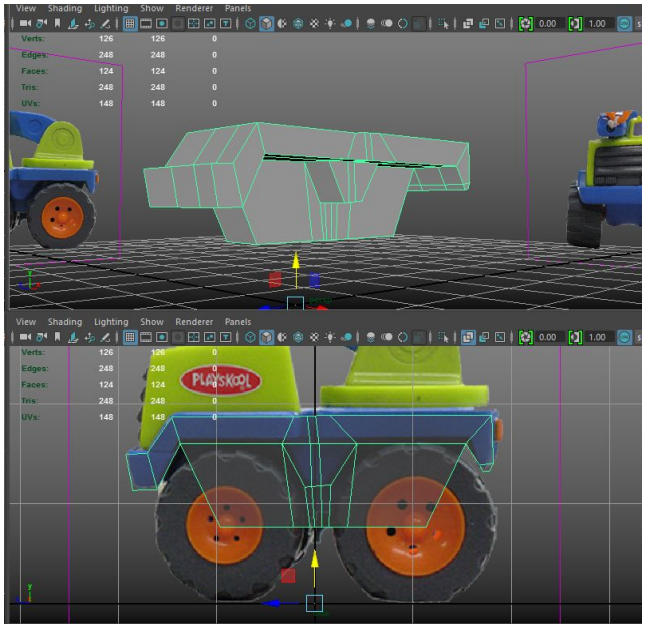
With those faces selected extrude down. To make the faces go straight down you need to ensure that the blue power button looking symbol (technical term) is turned to the right, to accomplish this, click it. That is your global button. It decides which direction your faces are moving. If it is turned off (default), The faces will go in whichever direction the faces are facing. With global turned on, they will follow the scenes axis directions, meaning you can straight in a direction instead of relying on the faces, as they are not always positioned in such a way that is helpful.



Now just grab the handle (green arrow, unless it is selected, then it will be yellow as in the picture below) and move it down. It will look something like this

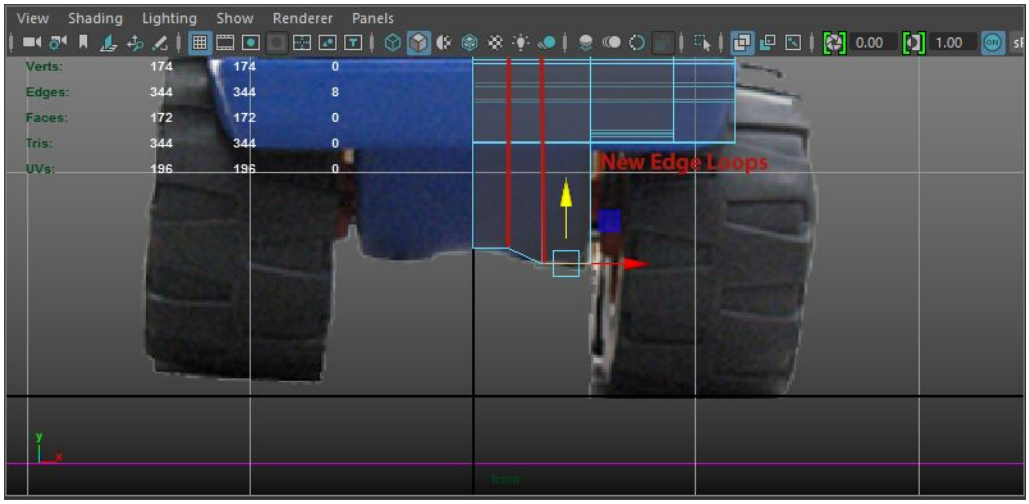


To flatten out the faces, you can use the Scale tool while the faces are still selected. So, press R. and grab the green box on top and pull it down until it will not go down any further. This will flatten out the faces. While we have the scale tool and faces selected, go ahead and scale them in a little bit too try to make it match the images the best you can.

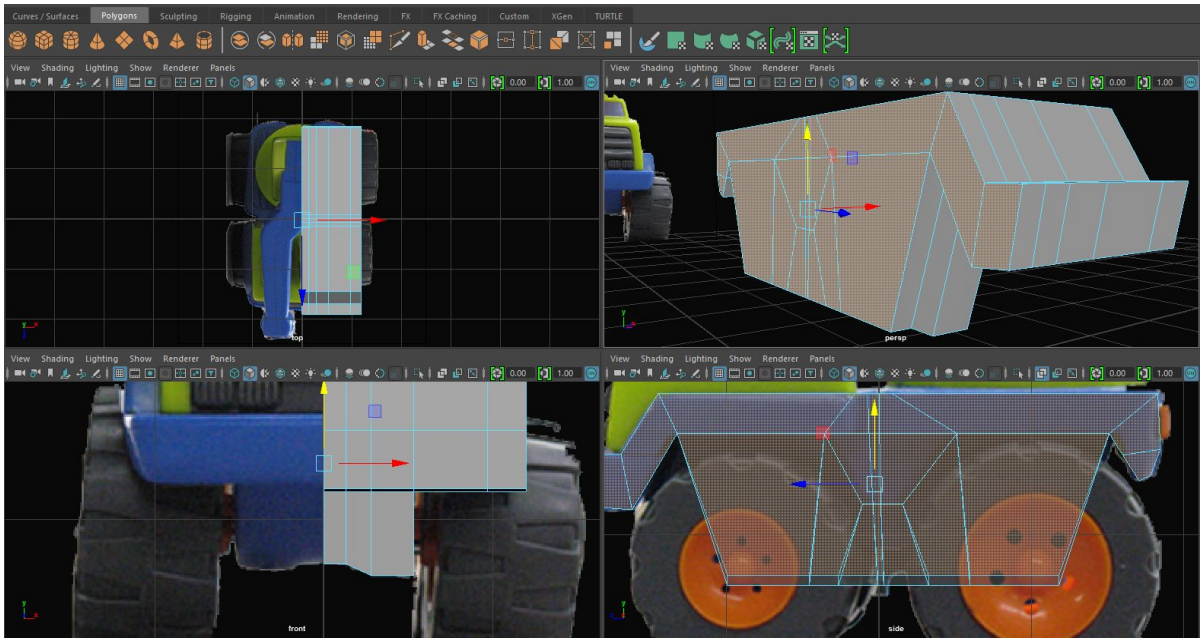


8. **Mirroring the Geometry.** (and a quick adjustment)

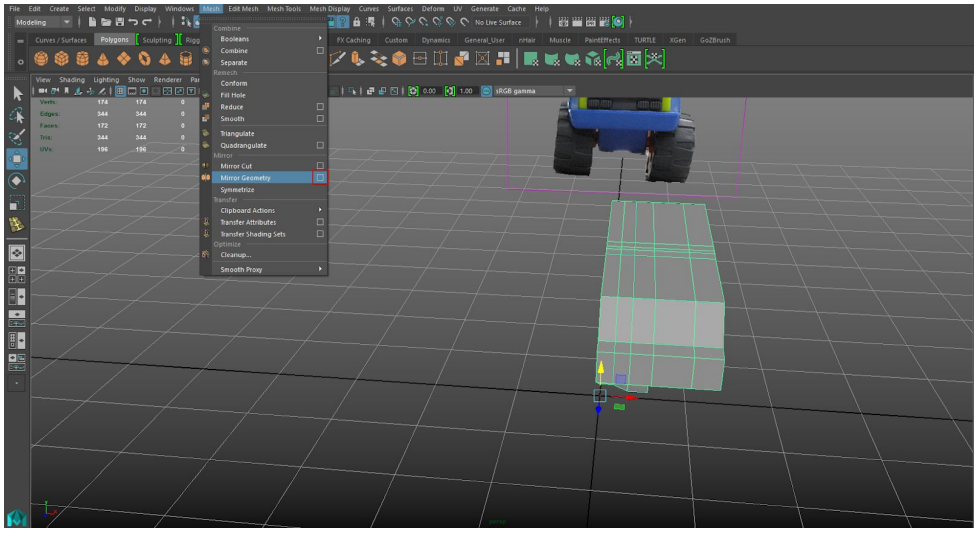
Now that we have half of the chassis built, we can use the insert edge loop tool to create the curve on the bottom of it and mirror the geometry to create the whole chassis. Add a couple of edge loops on the front (using the front viewport) and drag-select the edges and move them like so. (If you drag-select, it will select all of the edges that are behind the front edge. If that makes sense)



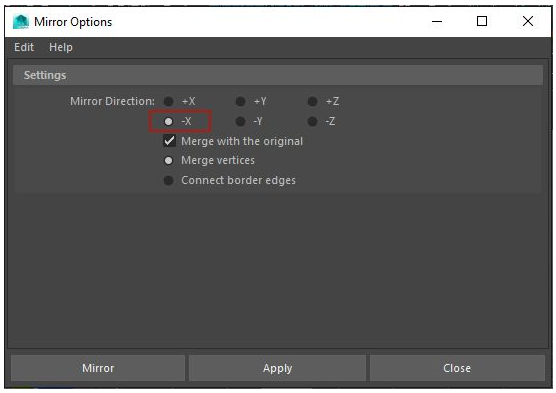
Now, we need to mirror the geometry and the chassis is complete, but before we can do that, we have to delete our back-faces, or they will become inside faces. If we don't do that, we will not be able to use the insert edge loop tool or the simple chain selection method. **DO NOT FORGET THIS STEP!!!** So the faces that you have to delete are the ones opposite of the way you extruded.



To mirror the geometry, hold right-click and select object mode. Then select the object. Next, go to **Mesh>Mirror Geometry**, but click the box next to it. This will allow you to set the options for the action.



For this model, we have been building from the positive x, so we will need to mirror the object to the negative x.



Now you should have a completed chassis.