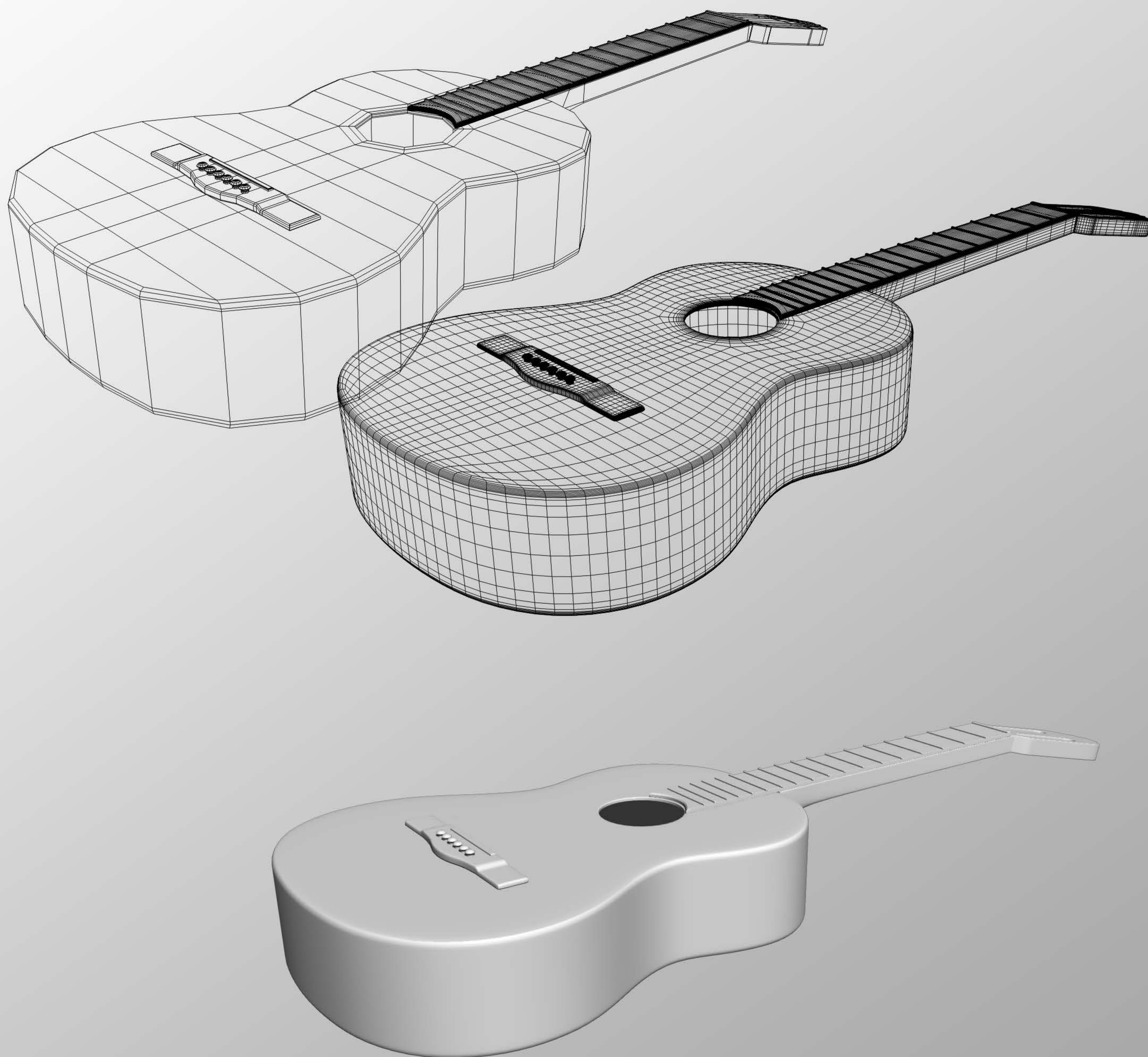


Guitar Poly Modeling - PART 1

Tutorial by Charlotte



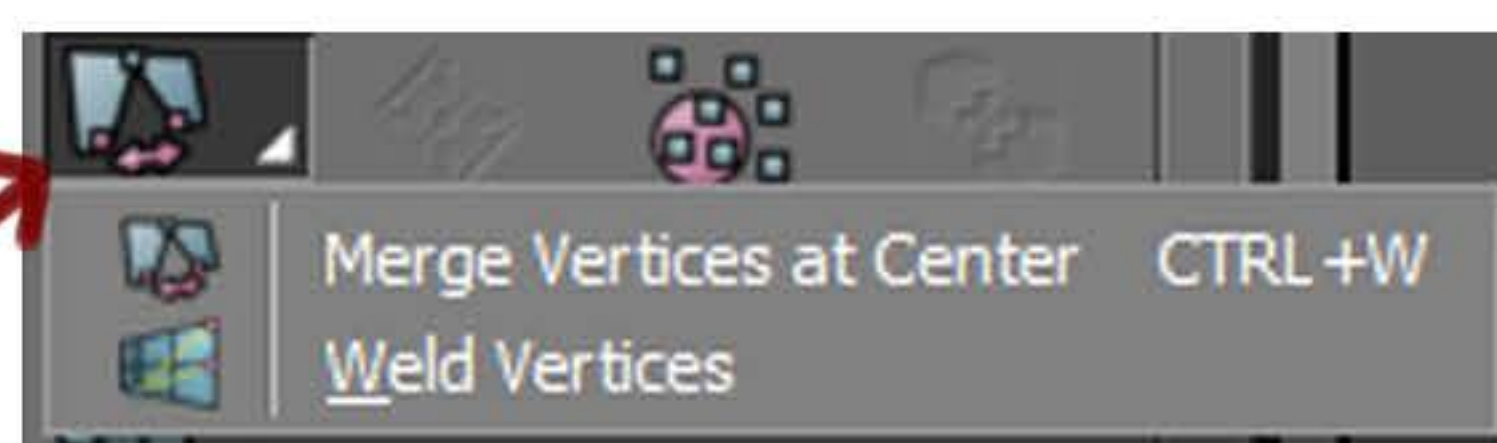
Before starting, let's talk about the tools that we will use in that tutorial. There are different ways to use the tools in Shade 3D :

- The toolbox (the picture on the left side). You can find this toolbox on the left part of the software's interface.
- Right click: All the toolbox's tools are available with a right click in the viewports.
- Shortcut: Some shortcut are already created but you can also make you own shortcut.

You can use the tools the way you want. For more efficiency, I strongly recommend to use the shortcuts, this is the fastest way. But either way is fine and will lead to the same result.



Let's now talk about the mesh tools.



1. Merge tool : comes in two options :

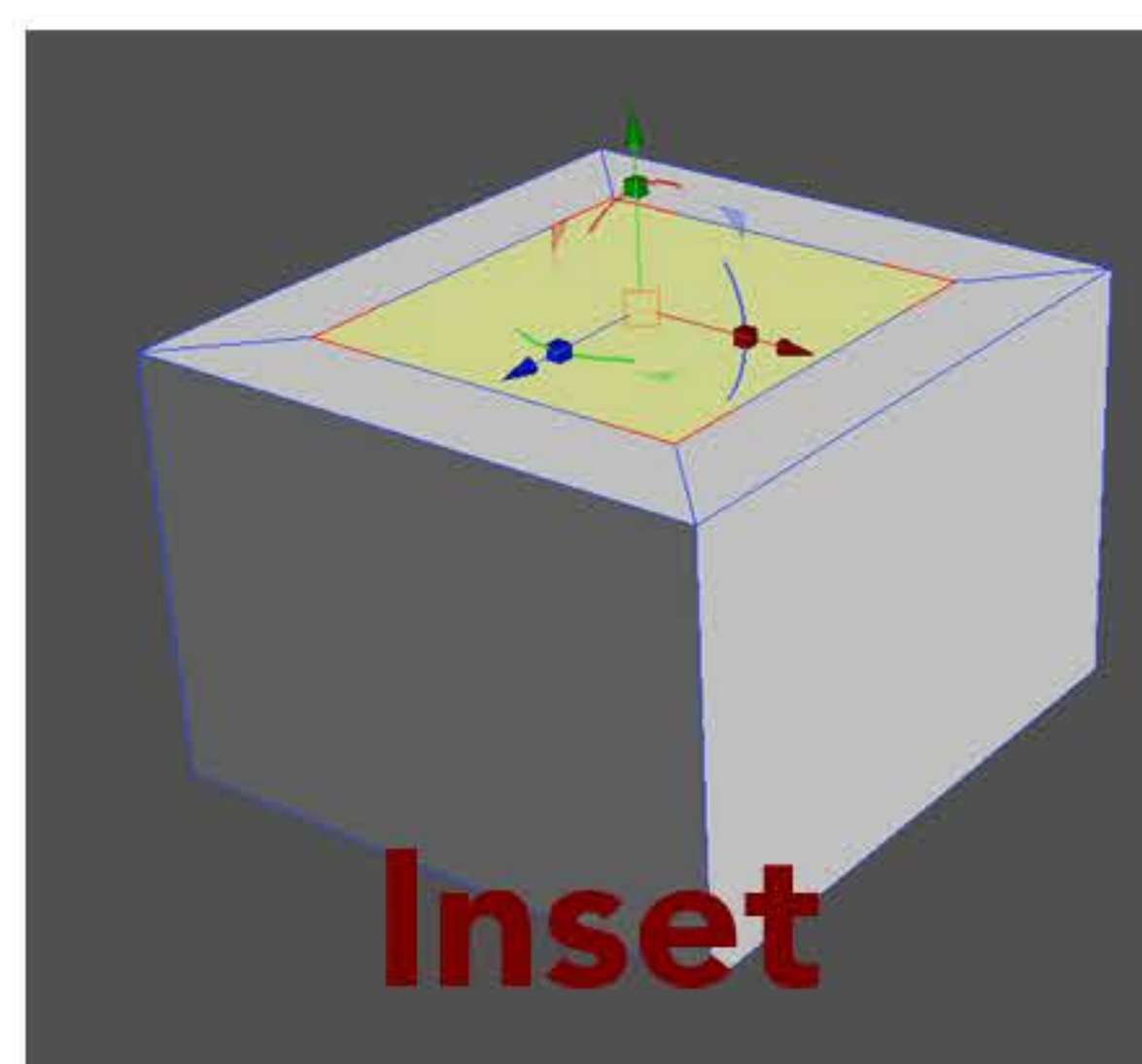
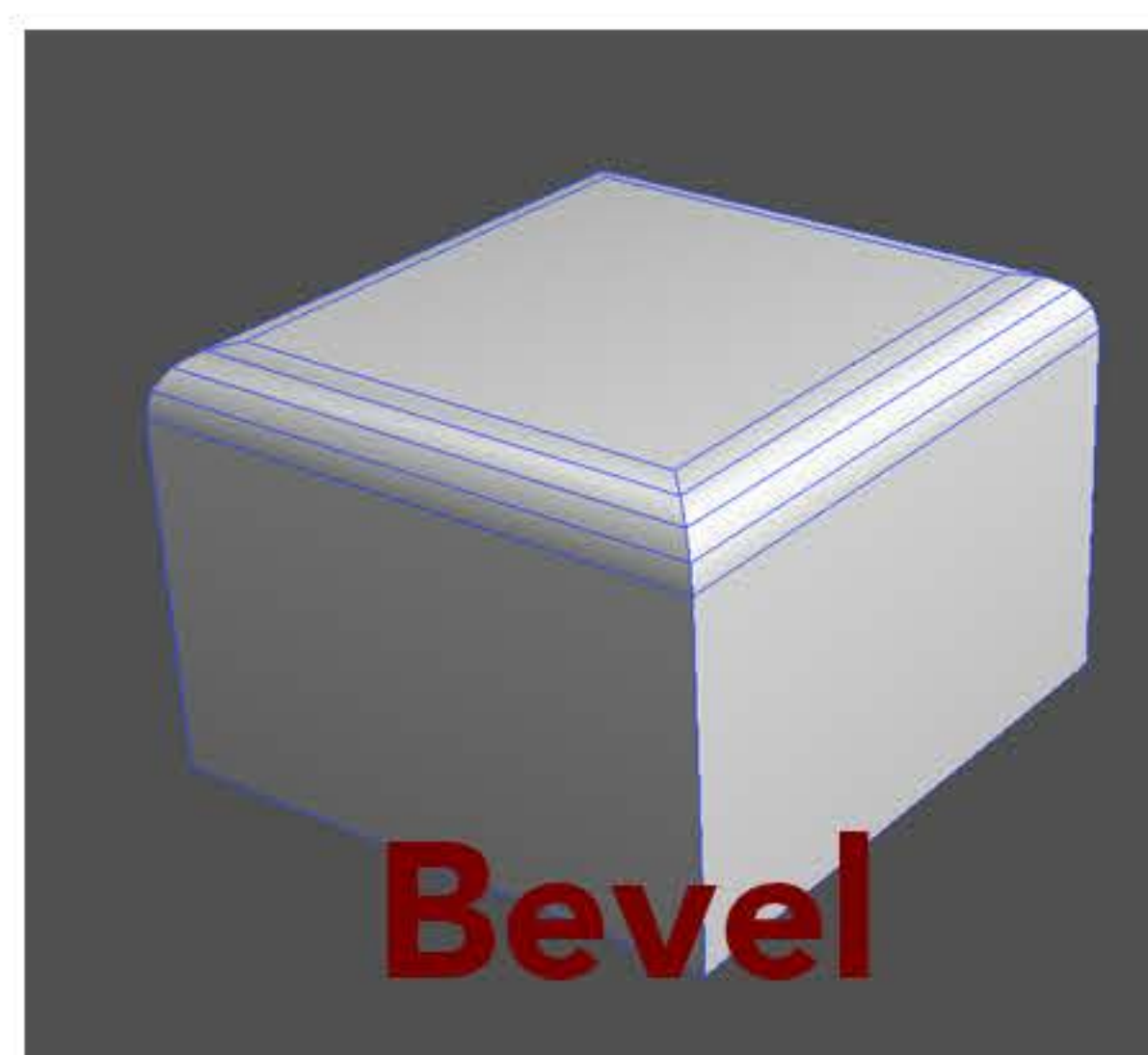
- The first one will merge two (or more) vertices at the center.

- The second one will place the vertices at the first vertices you selected before. Be careful, that mode doesn't merge the vertices! The vertices you selected will be in the same place, but not merged (use the Merge vertices at center right after if you want them merged).

2. Face tool or Append face tool (depending on the Shade's version). This tool is pretty simple. It is used to close a hole, no matter how many edges the hole has.

3. Bevel : this tool can be used for different things (see pictures below) :

- as a beveler (offset mode)
- as an inset (extrusion mode)



4. Extrusion. Simple tool, you can extrude an edge or a face.

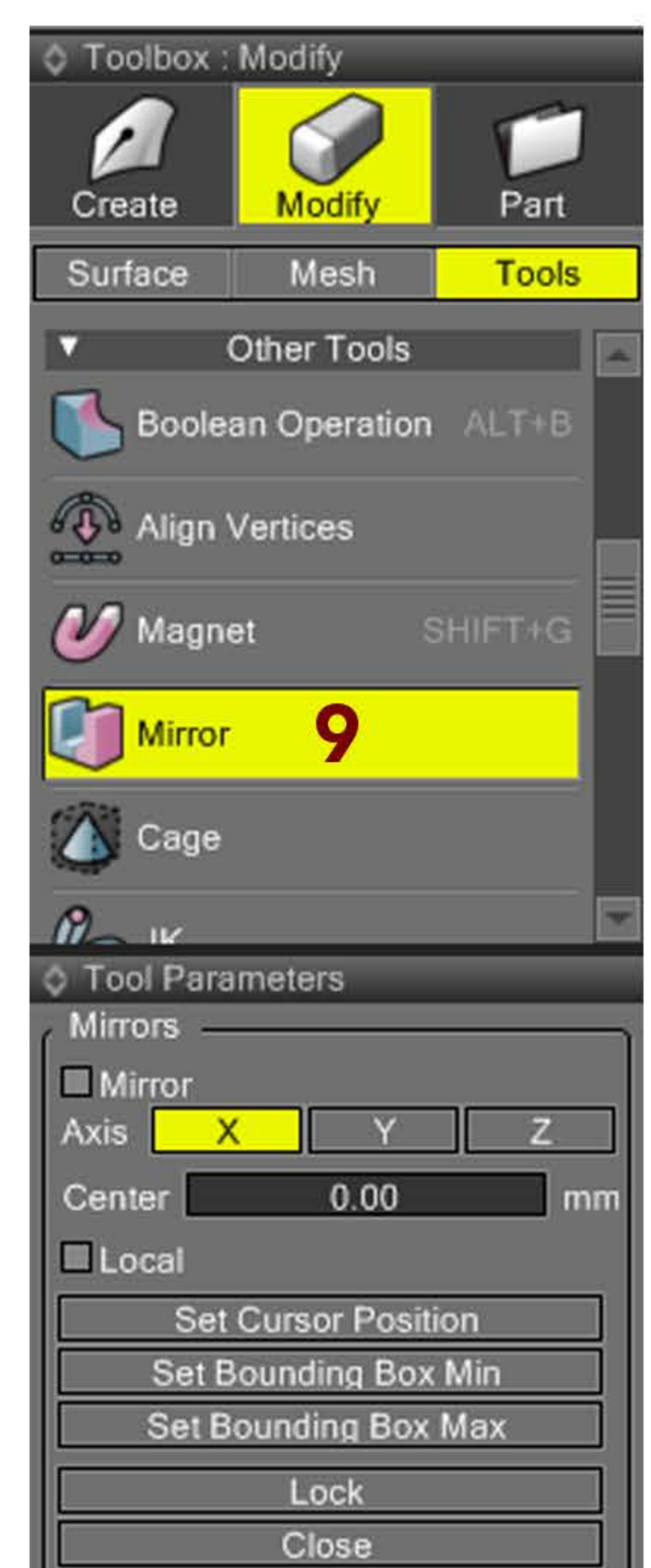
5. Thickness. You can only use this one in the object mode. As the name say it, it is use to add thickness to an object.

6. Bridge. To do a bridge between polygons (closing hole) but on the contrary on the Append face tool, all your polygons have to be quad.

7. Loop slice. A really useful tool. You can add edges all over a loop with that tool. Maybe the most used tool in this tutorial.

8. Subdivision Surface. This is the smooth mode of Shade.

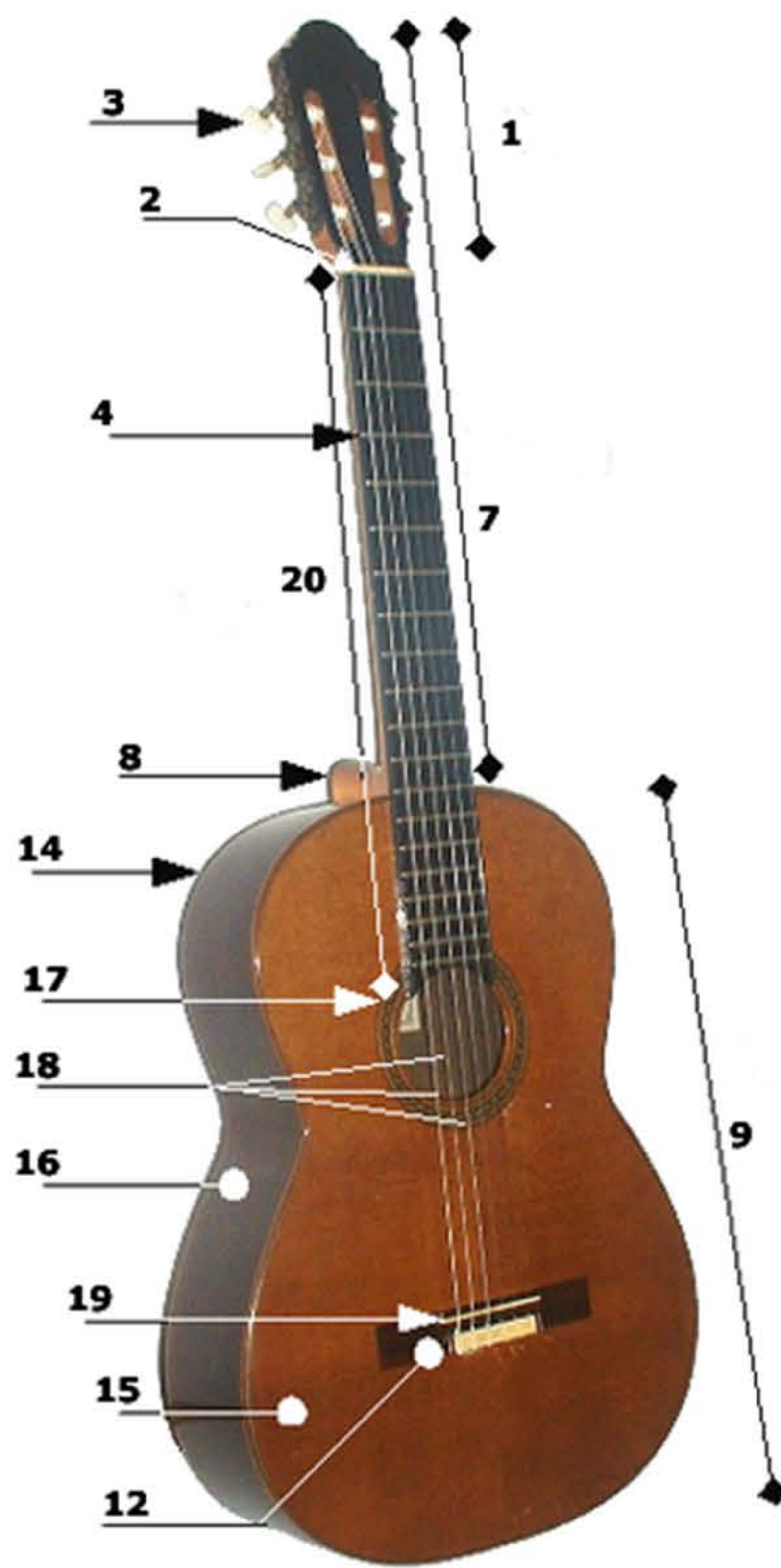
9. Mirror. The mirror tool is used for symmetry. It is quicker and easier to only do half of a model when this one is symmetrical. You can use this tool with the 3 axes and use he "set bounding to box min" or "box max" to set you mirror at either one or the other "end" of your model.



And that's all for this first part of the tutorial!

After the tutorial of the piano, let's do an acoustic guitar. If the piano was pretty simple, a guitar is a little bit more complicated, because of some apparent mechanism. The tutorial will be in two parts. Most of the modeling will be in the first part (the body, the neck, the headstock). But as the mechanical part is more complicated, it will be the object of the second part of the tutorial.

As for the piano, the first part we must do, is gathering a lot of references. In order to understand how the machine heads are made, try to find some close up of that part.



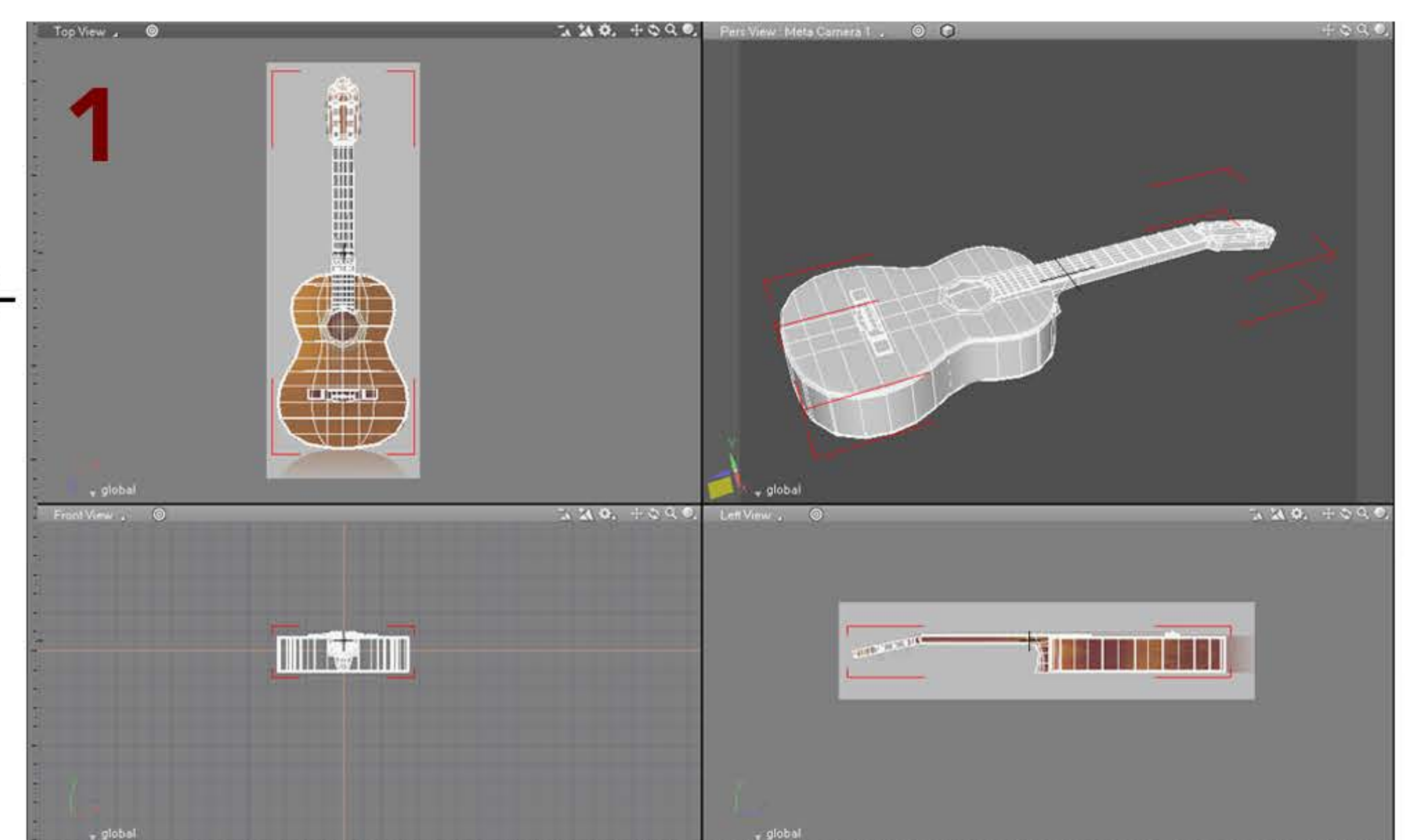
Here is a picture of an acoustic guitar with the name of the different parts from wikipedia.

In the first part, we will cover everything except the strings and the machine heads. Those parts are small but complex, they will need a lot of explanations.

- | | |
|--|------------------------------------|
| 1. Headstock | 11. Electronics |
| 2. Nut | 12. Bridge |
| 3. Machine heads (or pegheads, tuning keys, tuning machines, tuners) | 13. Pickguard |
| 4. Frets | 14. Back |
| 5. Truss rod | 15. Soundboard (top) |
| 6. Inlays | 16. Body sides (ribs) |
| 7. Neck | 17. Sound hole, with Rosette inlay |
| 8. Heel (acoustic) Neckjoint (electric) | 18. Strings |
| 9. Body | 19. Saddle |
| 10. Pickups | 20. Fretboard (or Fingerboard) |

Part 1 : modeling of the body and the neck/headstock

1. Before starting the modeling, we will need to add some templates. It is easy to find templates for a guitar, so I advise to add a template in the top view and in the left or right view. That way, most of the guitar's body will be covered. We will need some additional pictures of some part, but for most of the modeling, those two templates will be enough (picture 1)



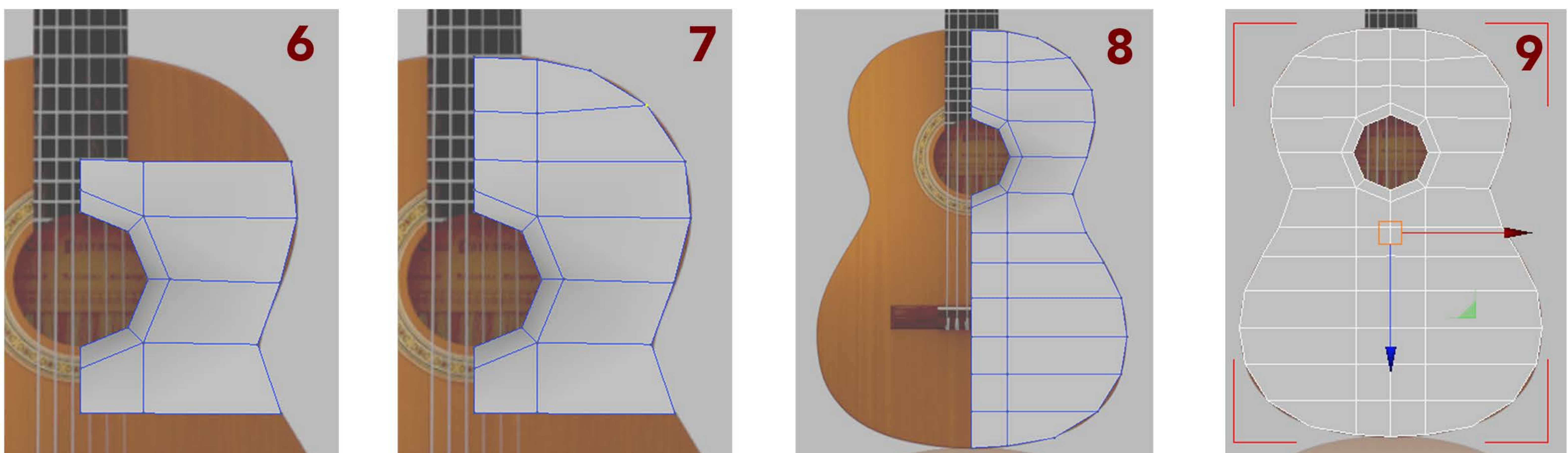
2. We start the modeling with the body of the guitar. We first create a cylinder with 8 edges. We only need the cap of the cylinder, so delete everything except the cap (picture 2). After that, use the bevel tool (extrusion mode) to create an inset inside the cap. Now that the inset is done, we can delete the central part of the circle (picture 3, yellow part).

As it is quicker to only do half of the modeling, then doing a mirror, we delete half of the circle. Then, we extrude the external edges as shown in picture 4 and 5. Those edges will be used for the definition of the body.

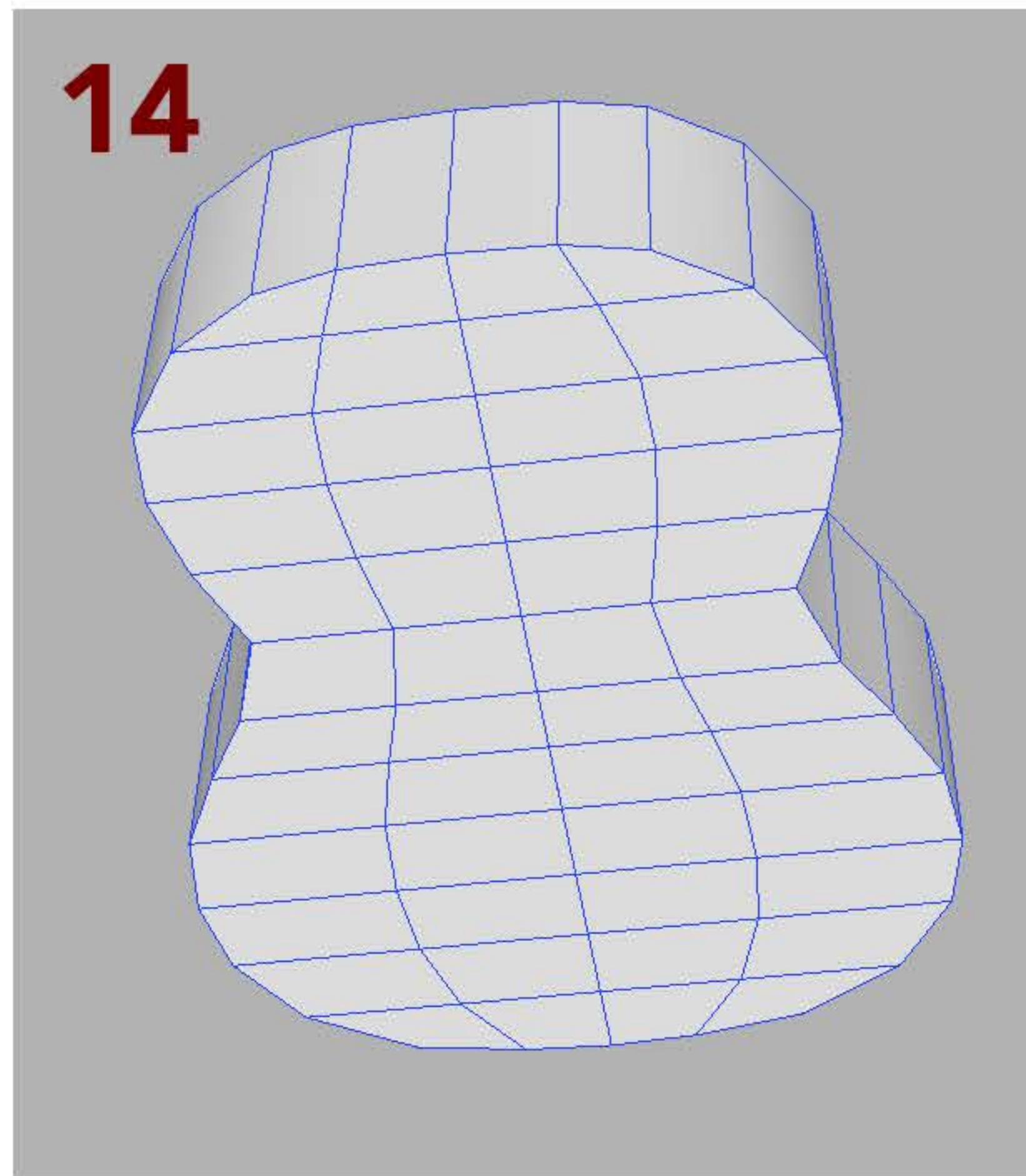
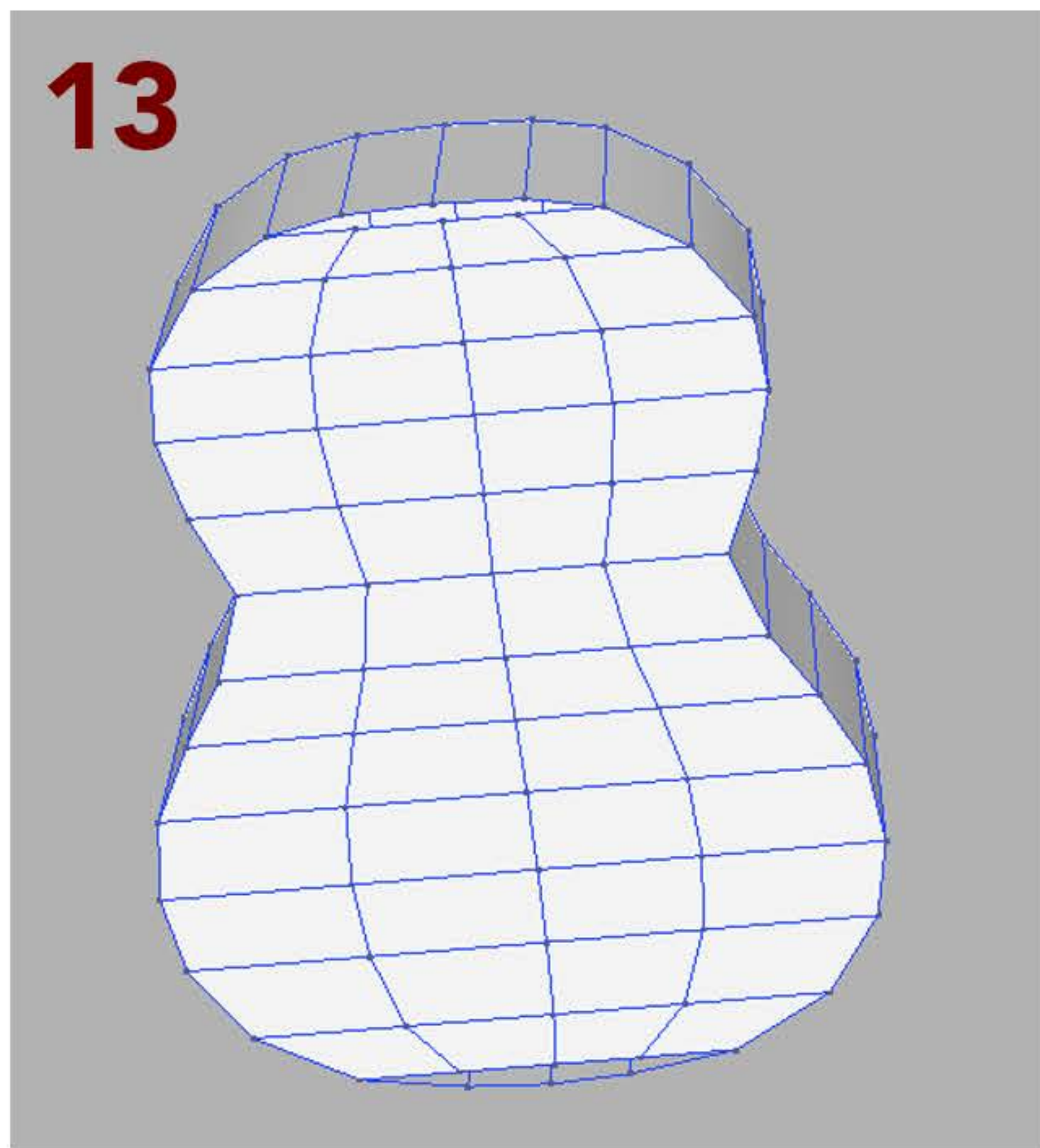
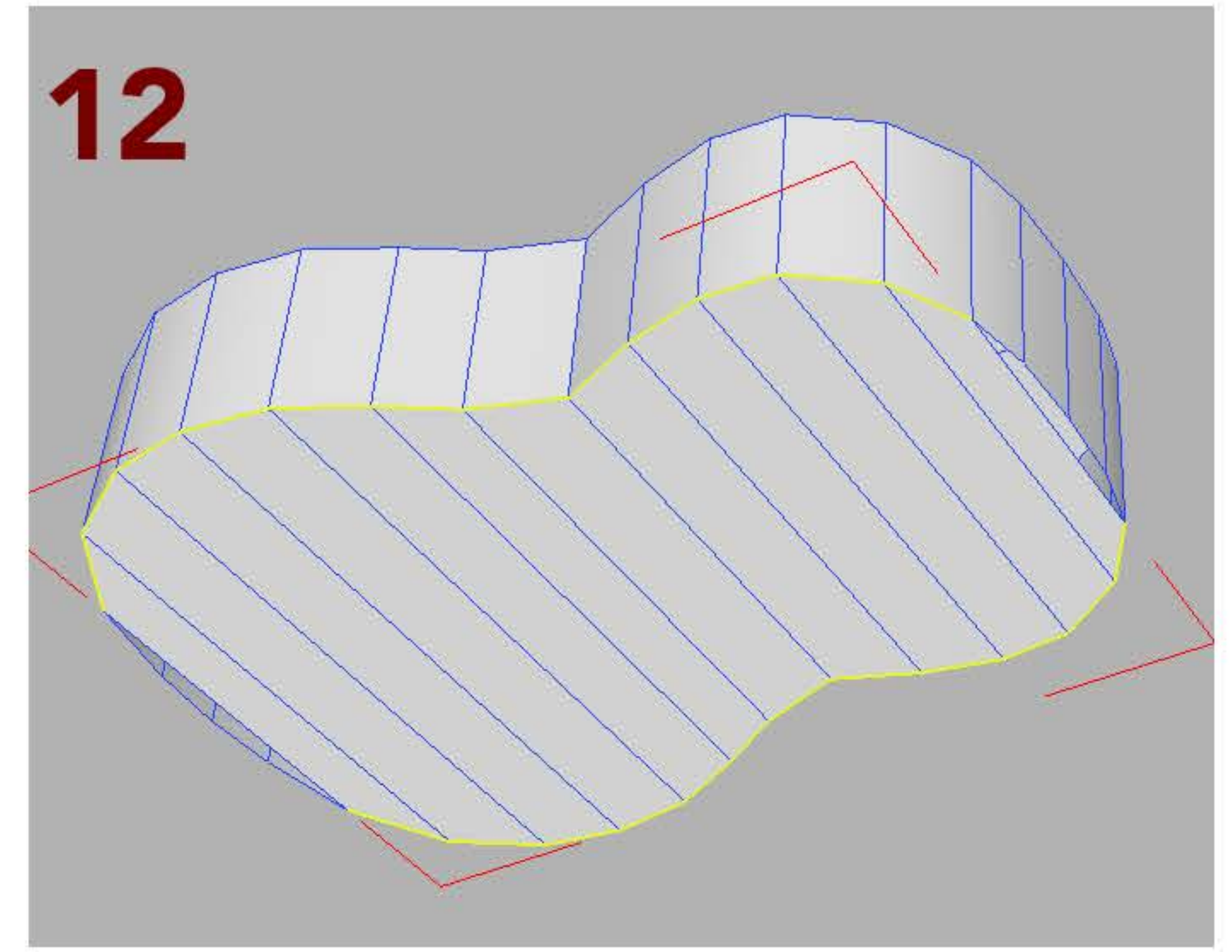
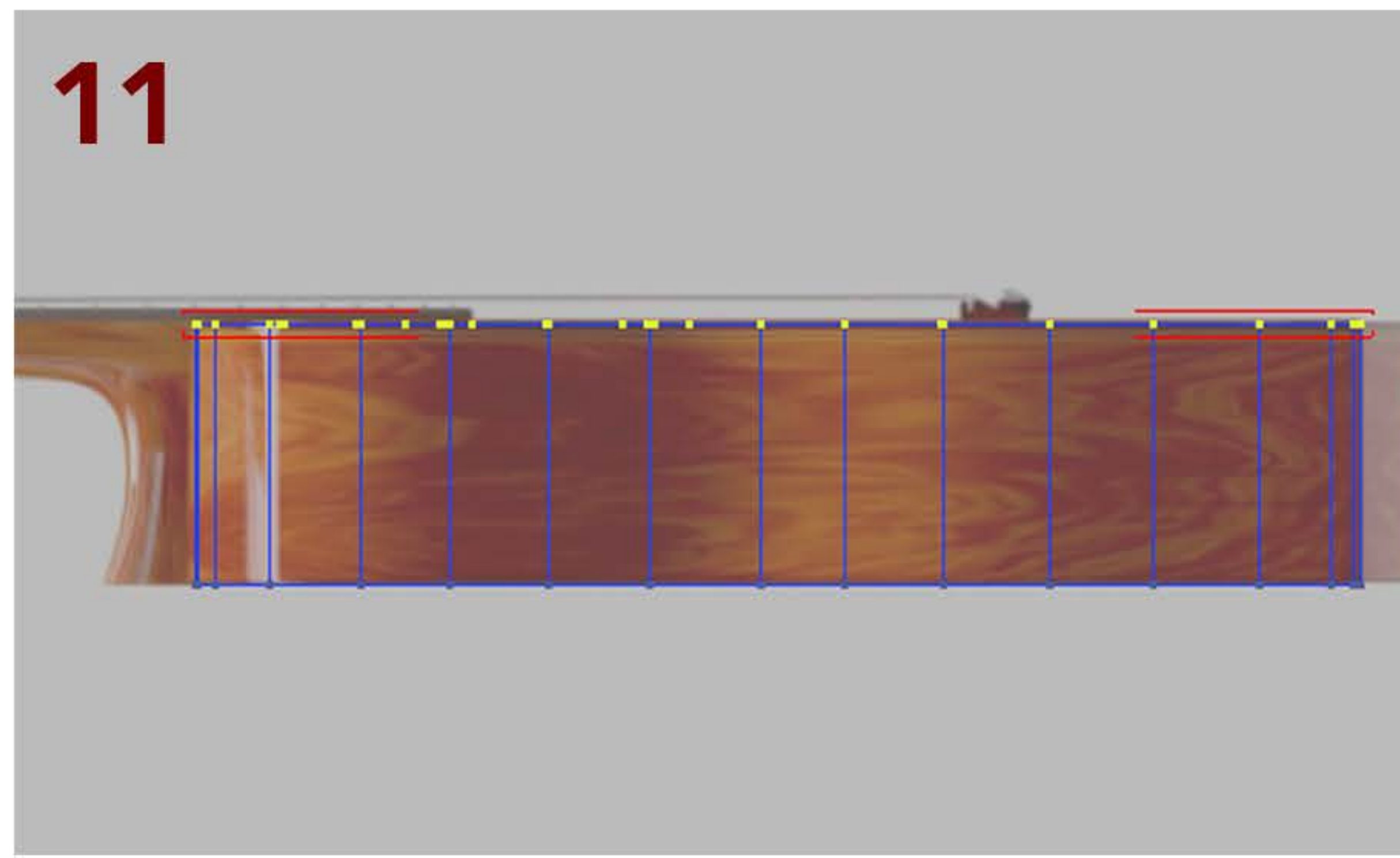
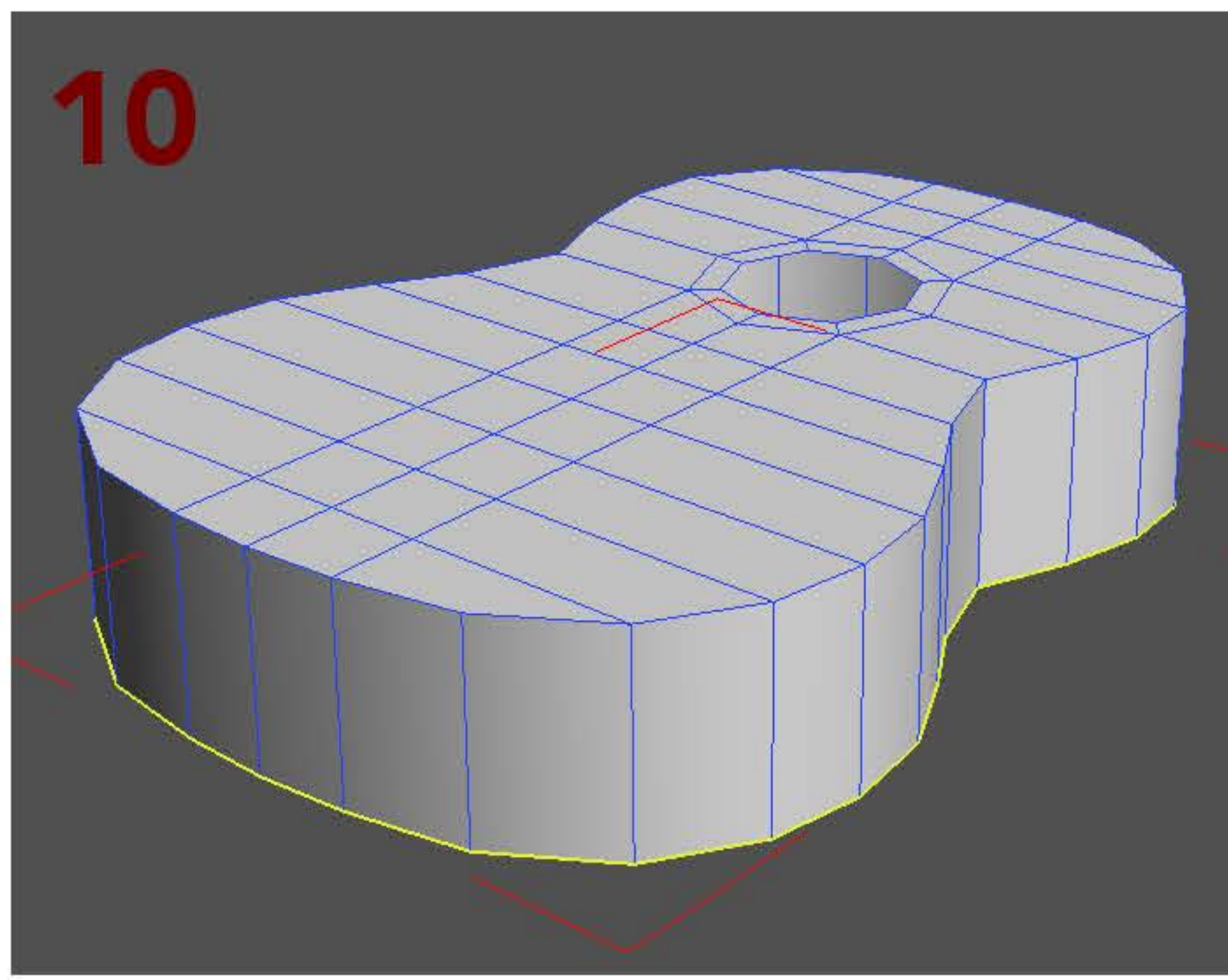


3. Now, we start arranging the edges we just extrude (picture 6). With some more extrusions, we can now define the top of the body as it is shown in picture 7. We do the exact same thing with the bottom part of the body (picture 8).

Half of the body is done! We only need a mirror on the X axe in order to complete the form of the body (picture 9).



4. Now, we need to add thickness to this flat form. For that, we have to select the external edges of the body and do an extrusion of it (picture 10). In order to have the right height, we can use the left view (or right, depending of the used reference) to adjust the extrusion we just did (picture 11).

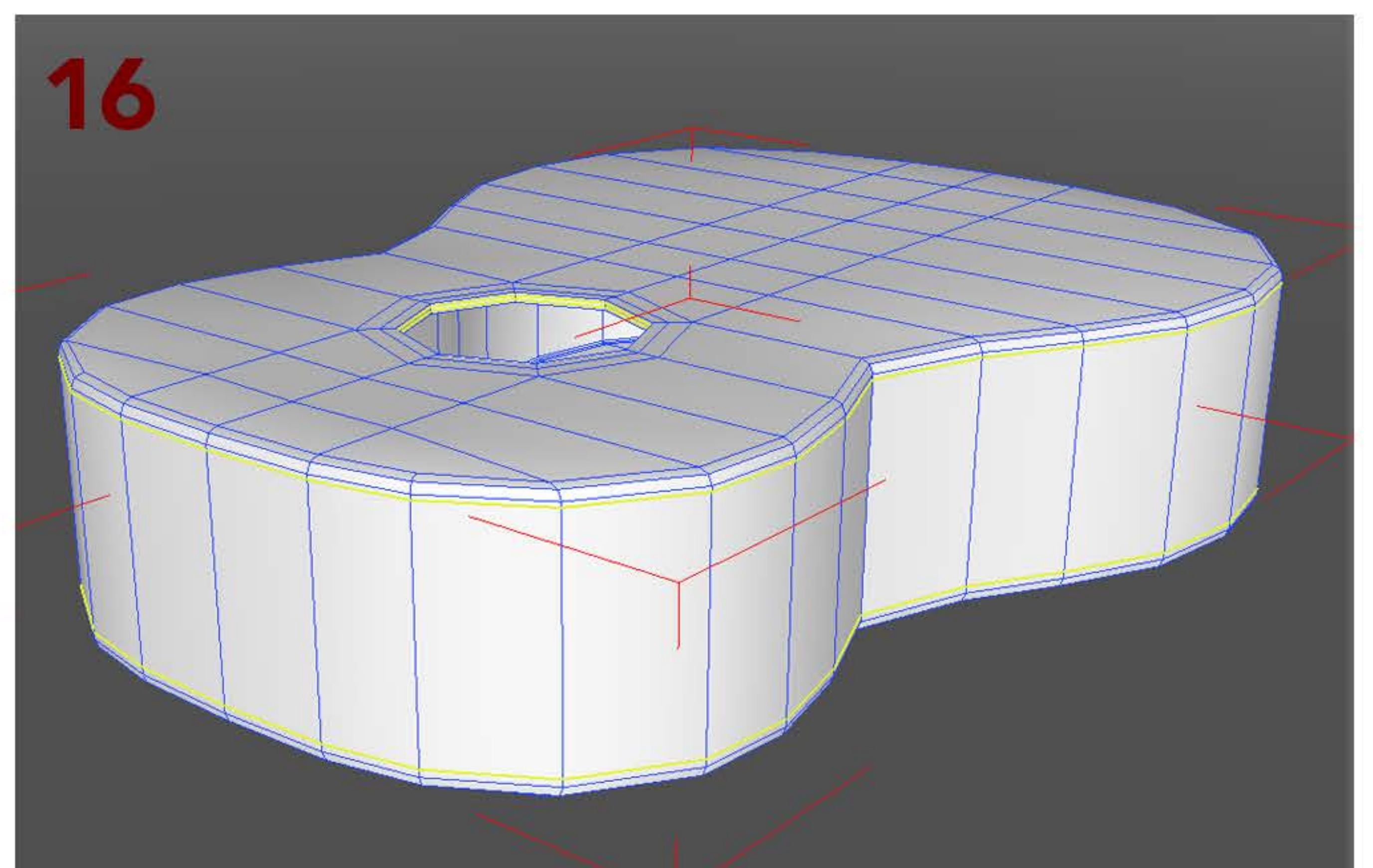
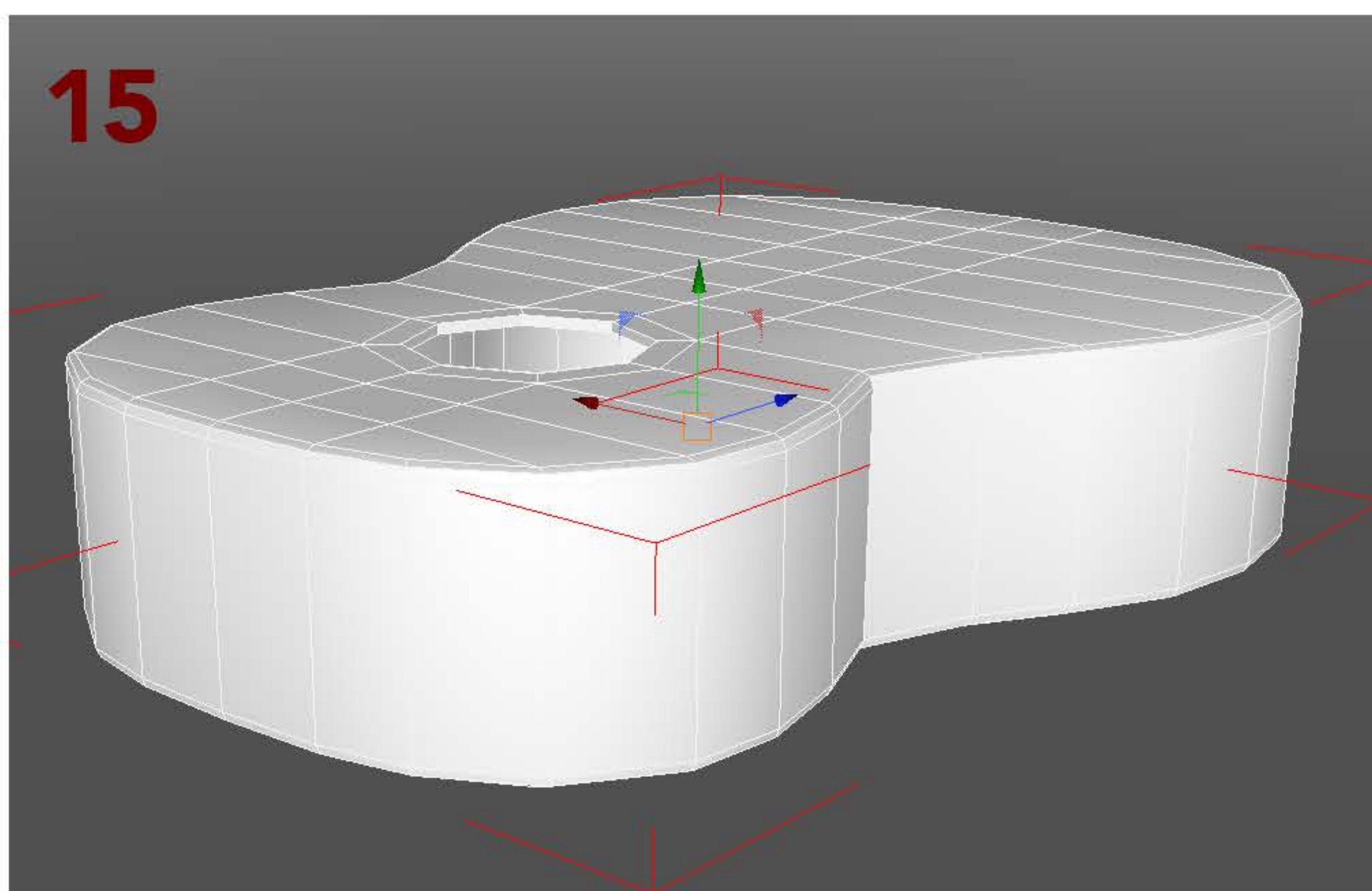


5. Now we need to close the hole and finish the form of the body. For that, select all the edges of the hole, except the fourth one, at each ends (picture 12) and append a bridge. Then, we just need to add some edges on the bridge we just did with the loop slice tool (you can also use the bridge tool and add directly three edges!). After that, we just weld the vertices and the main shape is done.

6. Now, we only need to do three things to finish the body :

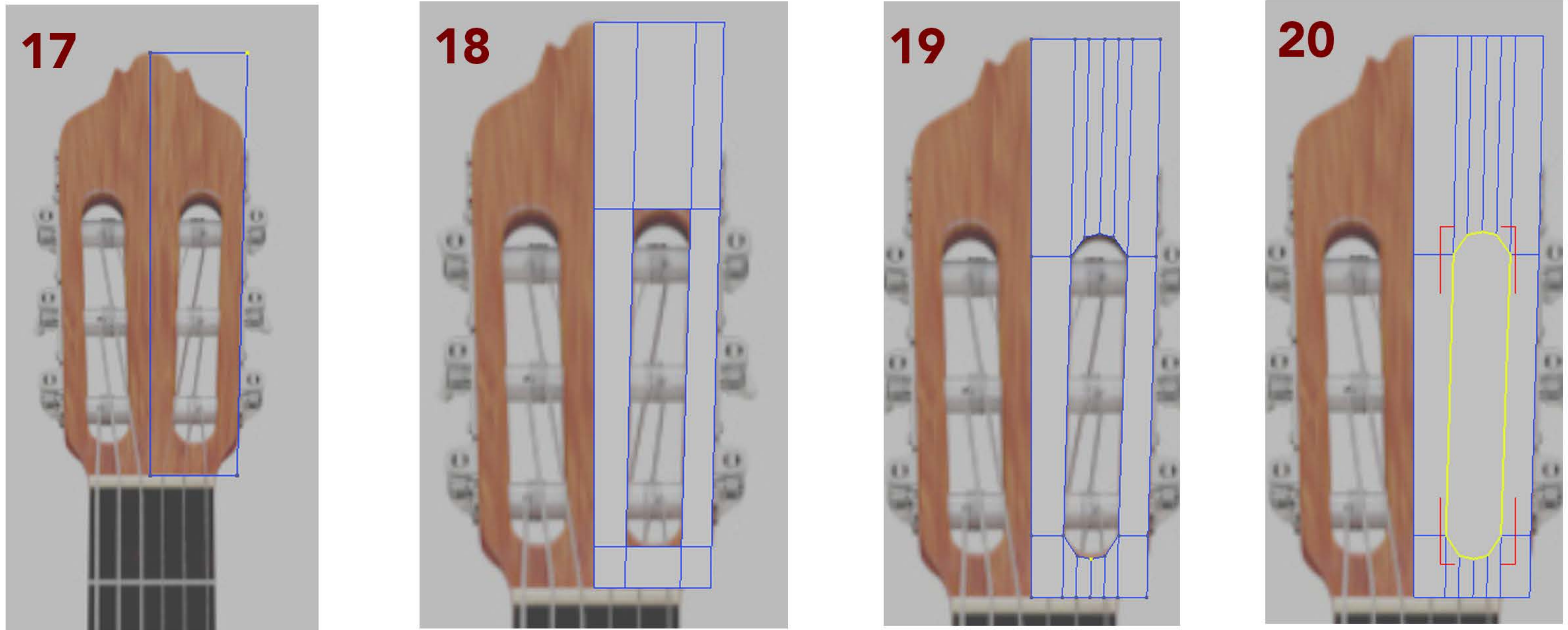
- first, we need to bevel the edges of the body. For that, we just select the two borders of the mesh and do a bevel (picture 15)
- second, we need to add a thickness to the whole mesh. For that, we need to be in the object mode. Then, we just need to use the thickness tool (picture 15). Be careful, if you add a too big amount of thickness you will have some problem with the bevel we did just before (on the inside). If you prefer, you can add thickness, and then, do the bevel. But if you do that, you will have to do a bevel in the inside of the body too for the open subdivision mode.
- and third, we just need to add some edges for the subdivision mode (picture 16).

Our body is now finished!

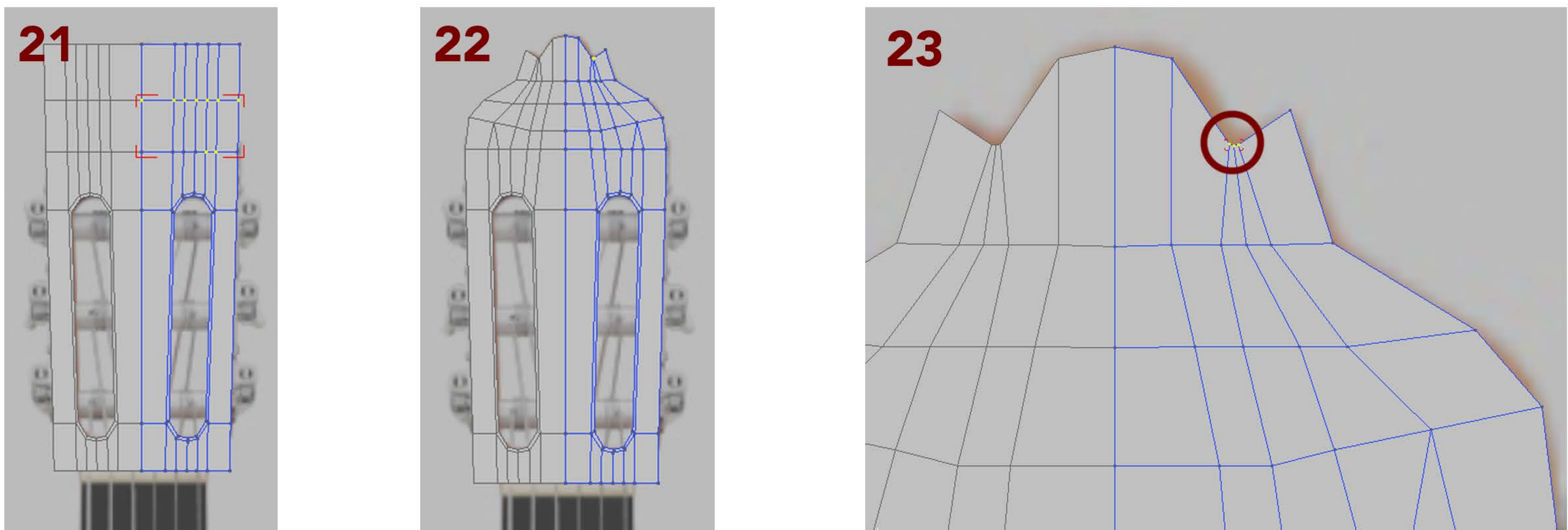


7. Now, we will continue the modeling with the guitar's neck. This part is a bit more complicated. The headstock is inclined but we will do it straight first, it's more simple this way. We start with a simple cube. Like for the body, we delete the thickness of the cube; we just need the flat square (picture 17).

Then, we add some edges and delete the central polygon in order to create the hole (picture 18). After that, we need to add some more edges. This way, we can create the hole's round shape (picture 19).



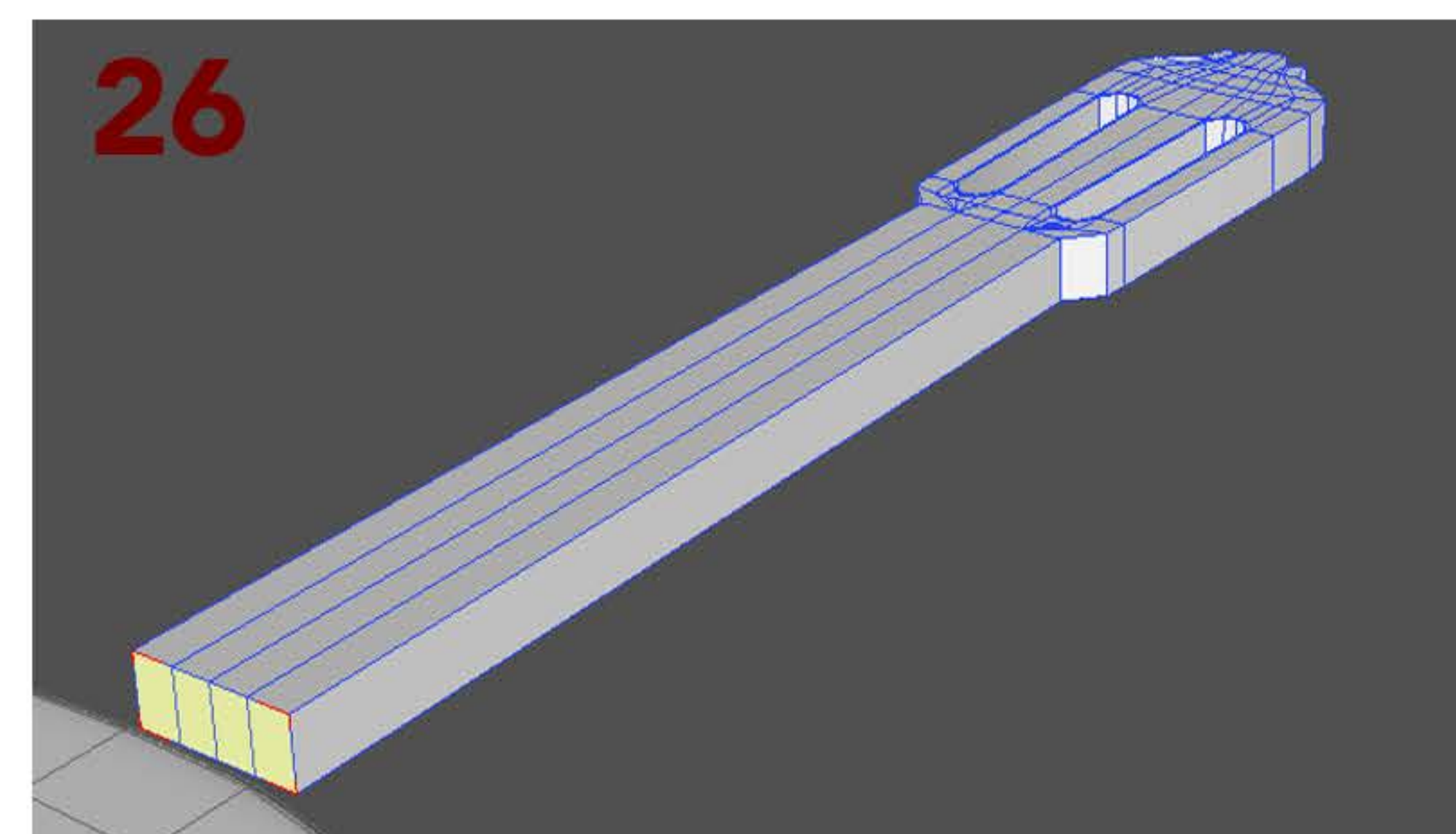
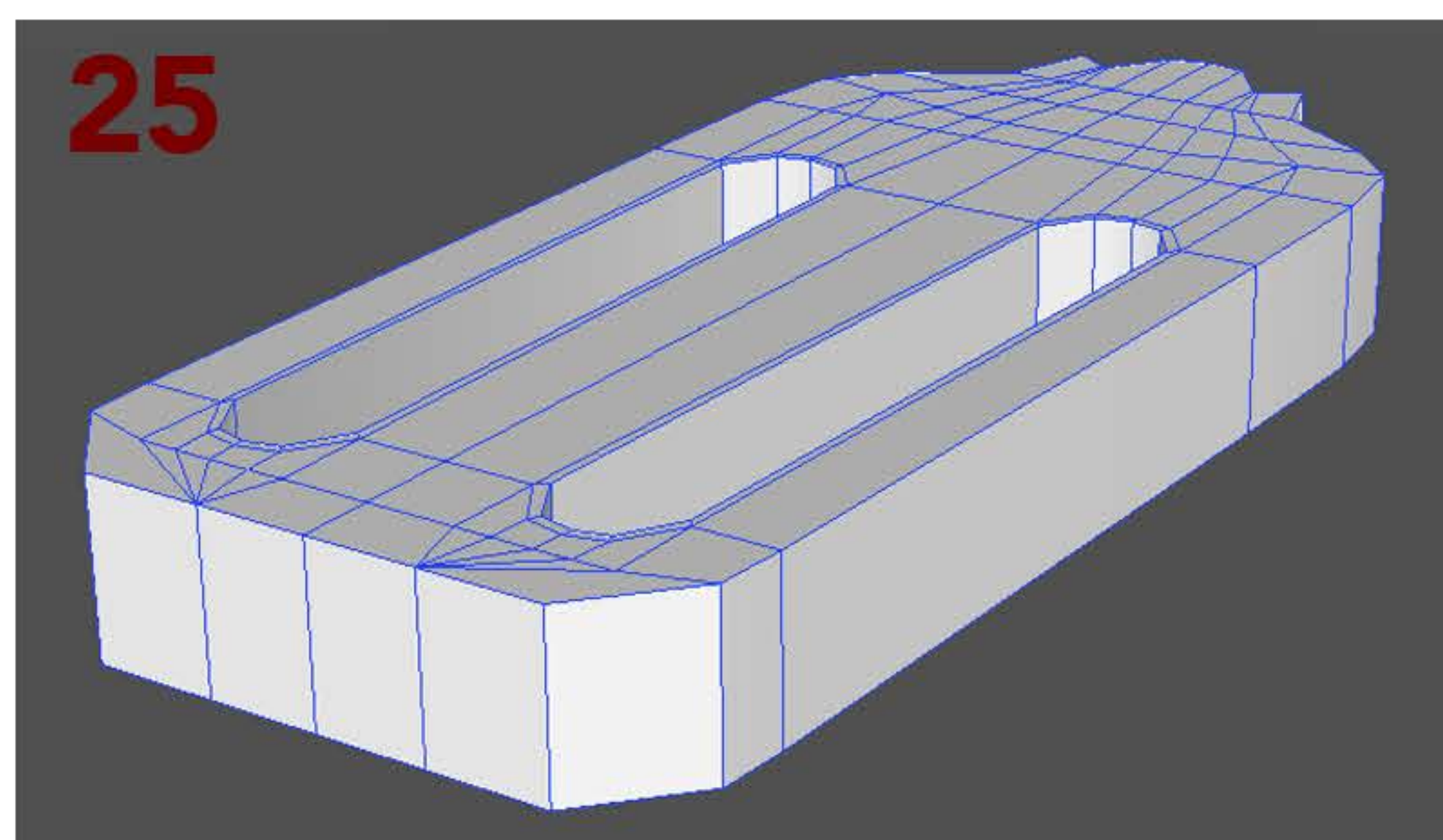
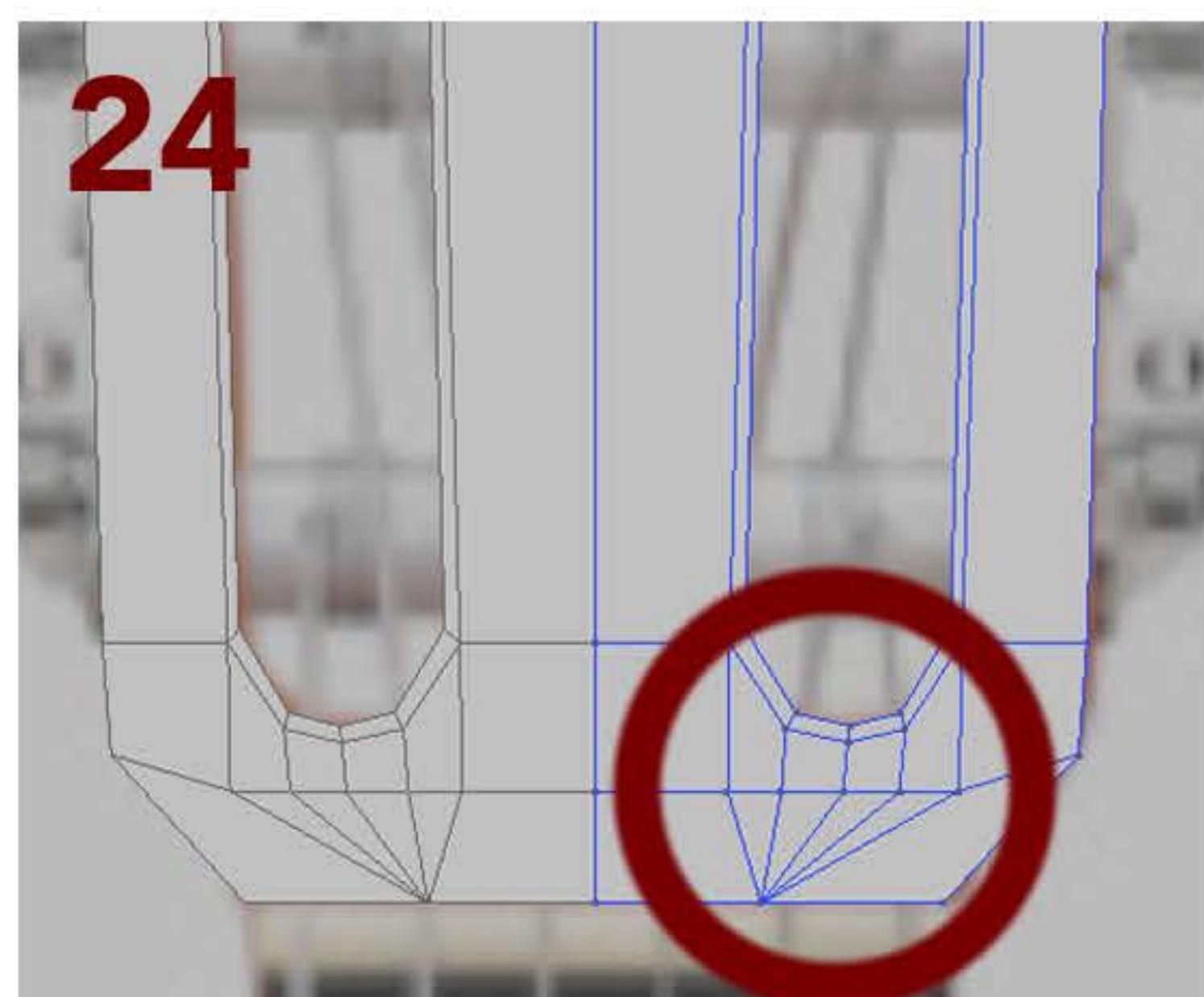
8. Now, in order to finish the hole we need to do an inset. For that, let's first do a cap on the hole. We just need to select all the edges of the hole and do an append face (picture 20). Then, we can use the bevel tool do to an inset. We can now delete the face we just created (picture 21).



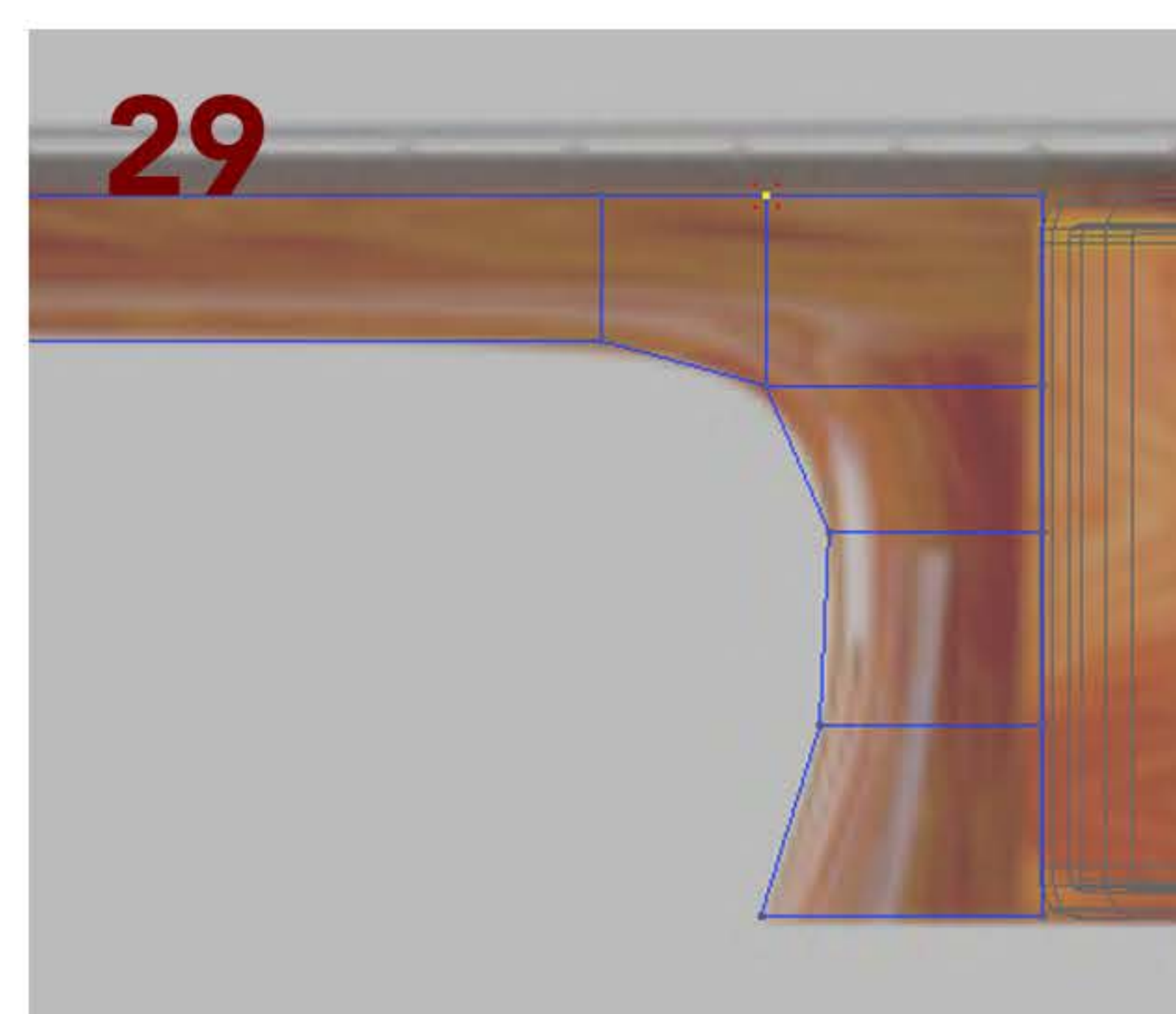
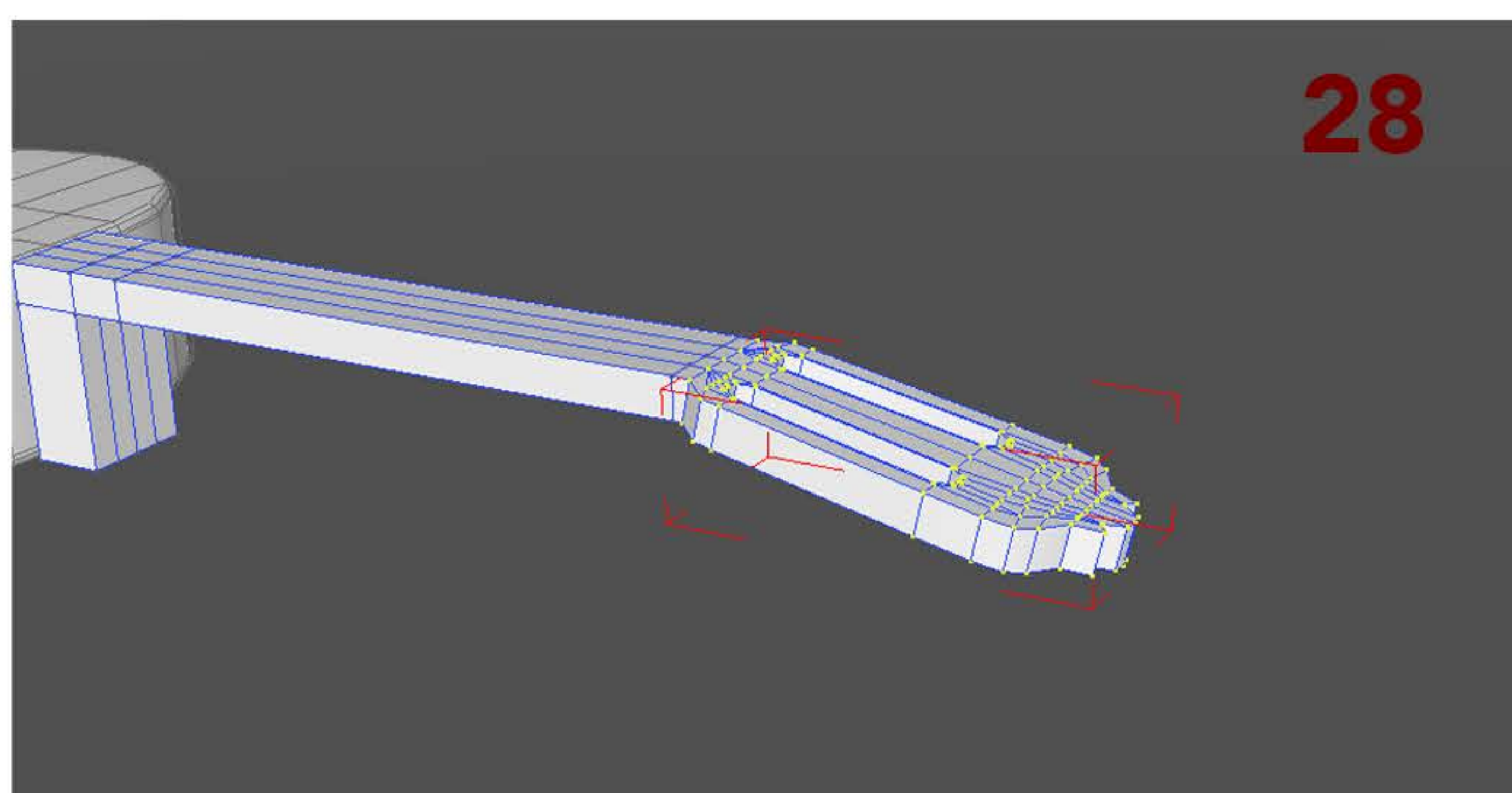
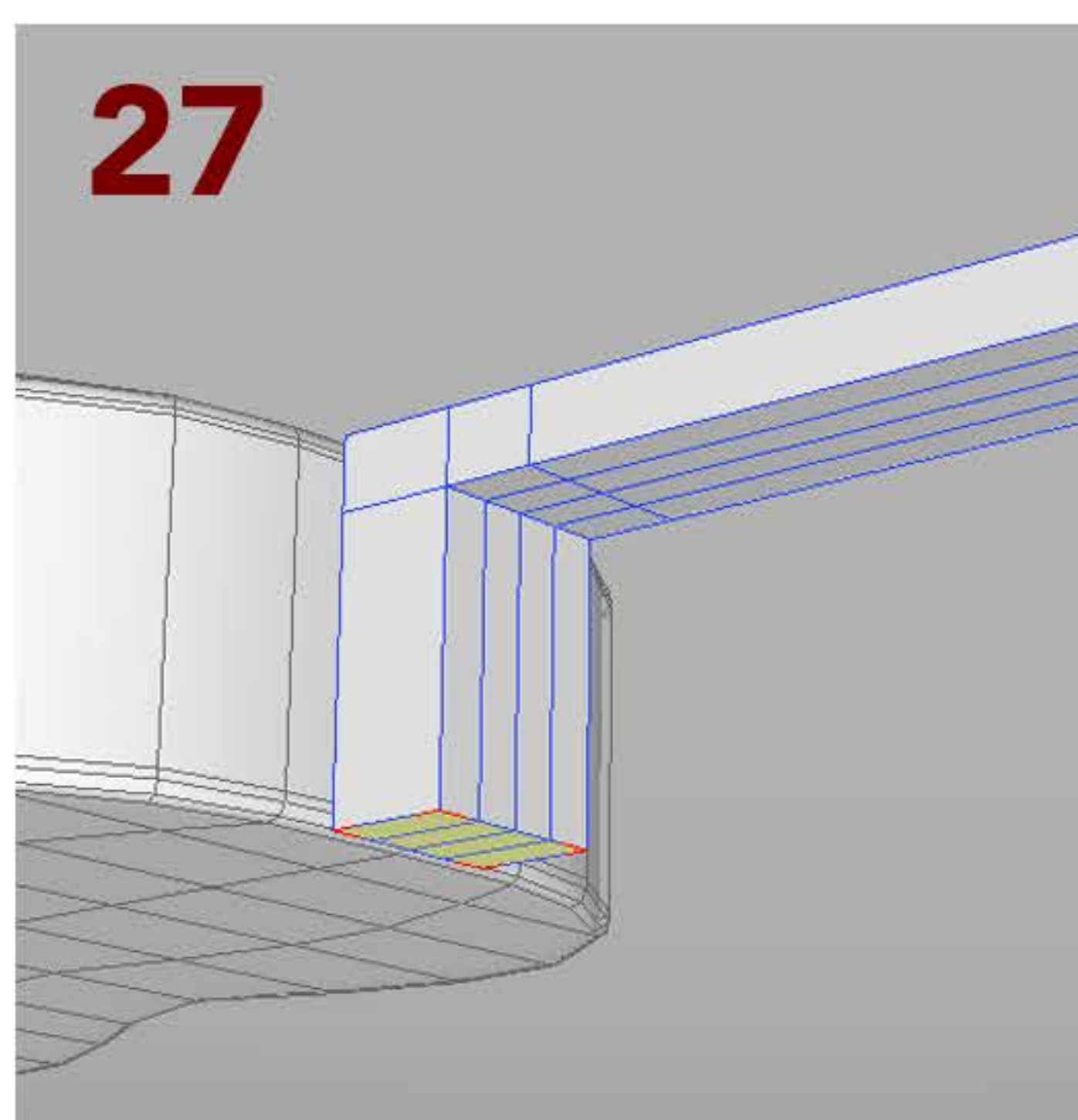
9. We need to give the right form to the piece! We will need some additional edges to do so (picture 21 and 22). We Now, we just need to follow the shape of the picture. As you can see on the picture 22 and 23, I choose to create the pinch on the wireframe with the edge we already had. That way, no need to add too much edges for the open subdivision mode.

10. Now, we need to finish the neck. First, because of the hole, we add a lot of edges. We don't need as much for the other part of the neck. That's why like shown on picture 24, it's better to merge some vertices.

Then, we need to add some thickness to that flat part! For that, as for the body, we use the thickness tool (picture 25). Then, with an extrusion, we can make the other part of the neck (picture 26- In order to have the right lenght (and thickness), don't forget to use your references.

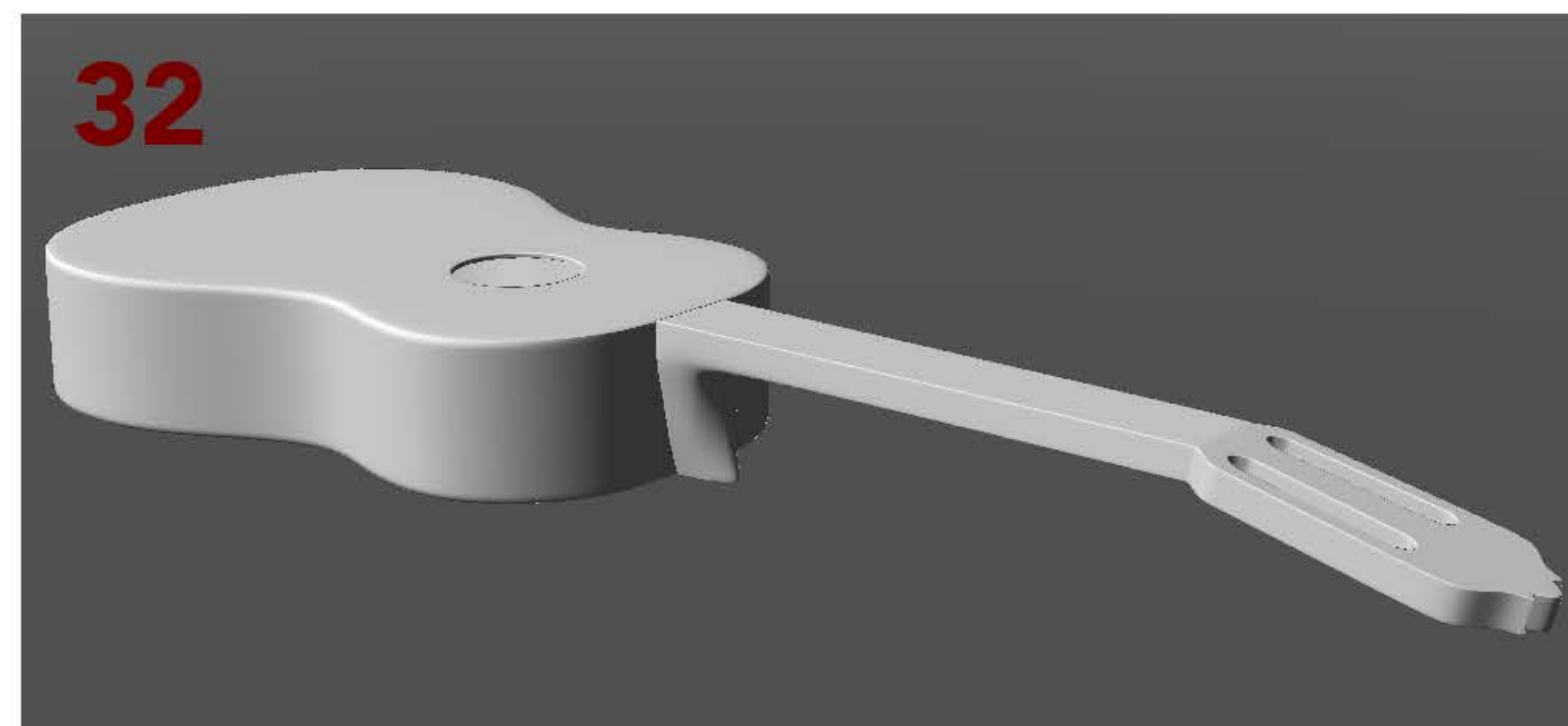
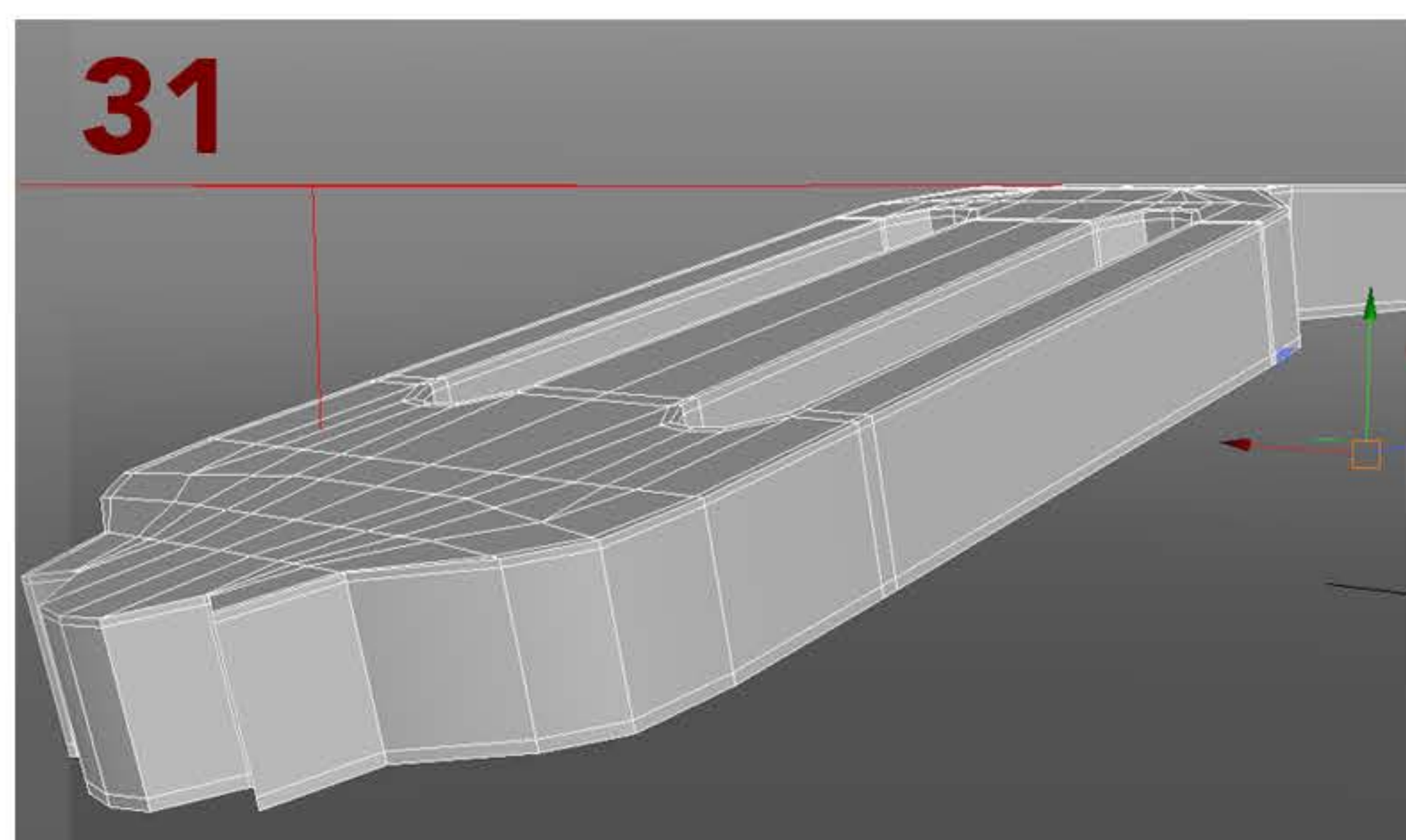
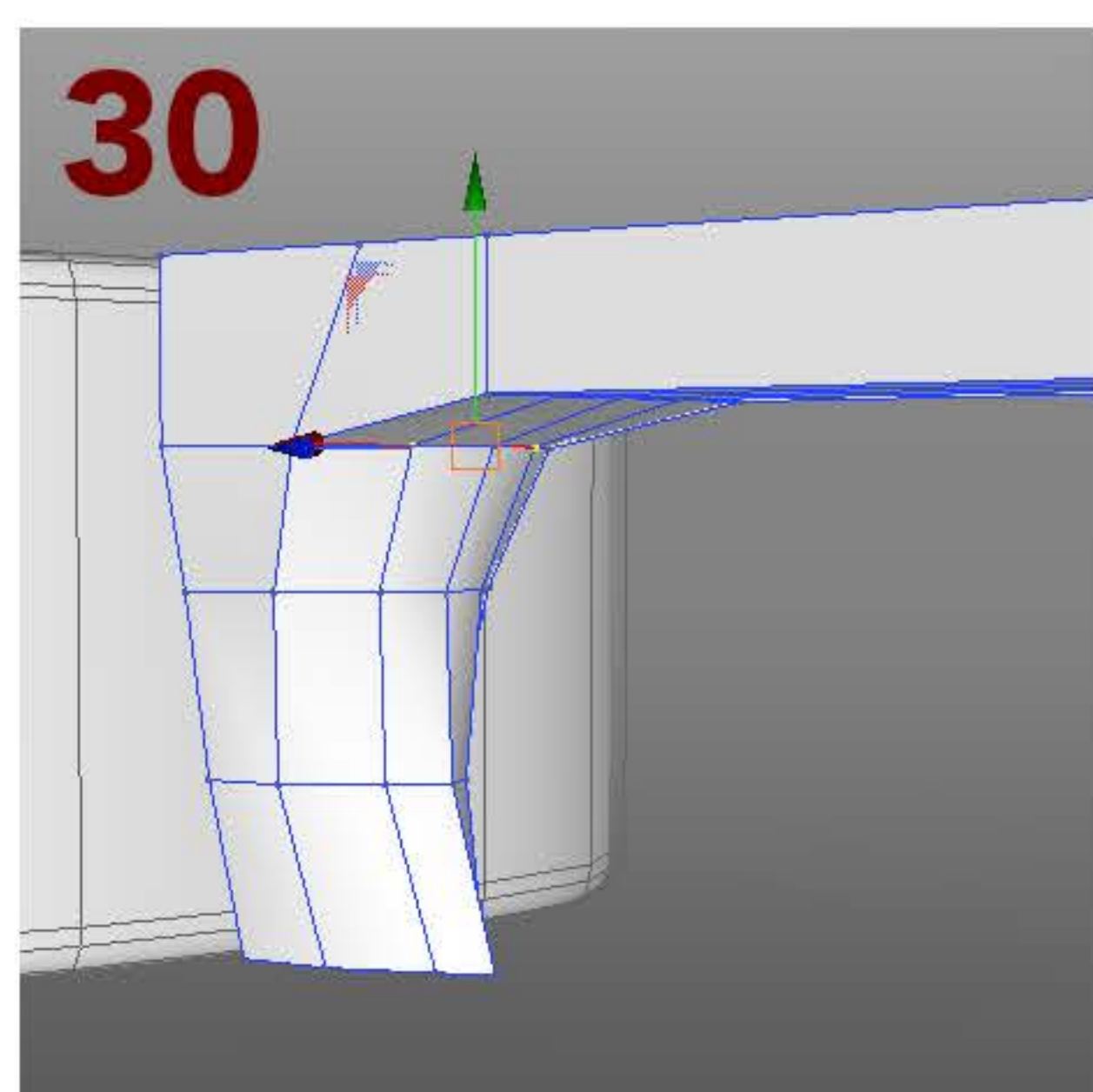


11. We now need to do an other extrusion to finish the general for of the neck (picture 27). For that, add a loop with the loop slice tool, then, do the extrusion. Now that the general form of the neck is done we can incline the head-stock (picture 28). Let's now add some edges on the neckjoint to refine it (picture 29). We need to refine it in two views, I choose to start with a side view.



12. Now, we just have to refine the shape in the modeling view (picture 30). For that, we need to select every vertice of this part, one by one, and move them until the form is right. When this is done, we need to add some edges for the open subdivision mode (picture 31).

This part is now finished (picture 32).



13. For the first part of this tutorial, the body and the neck were the most complicated parts. For the following parts, I just put some pictures of the wireframe and the final resultat. For all of them, this is just a box with a few additional edges. It shouldn't be a problem at all!

So before the second part of the tutorial, you need to finish :

- the frets (picture 33)
- the bridge (picture 34)
- the saddle (picture 34)
- the fretboard (picture 35)

And with that, we are ready for the second part of the tutorial, where it gets a bit more complicated!

