

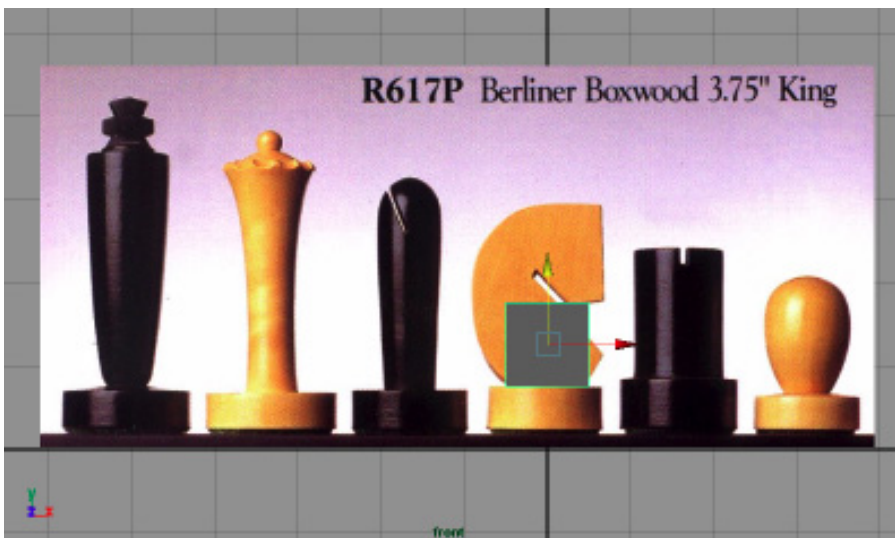
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Modelling a simple chess piece. POLYGONS

So far we' ve been using NURBS to create the Chess Pieces. As you' ve experienced they are tricky and it requires alot of practice to become proficient with this modelling method due to the technicality involved.

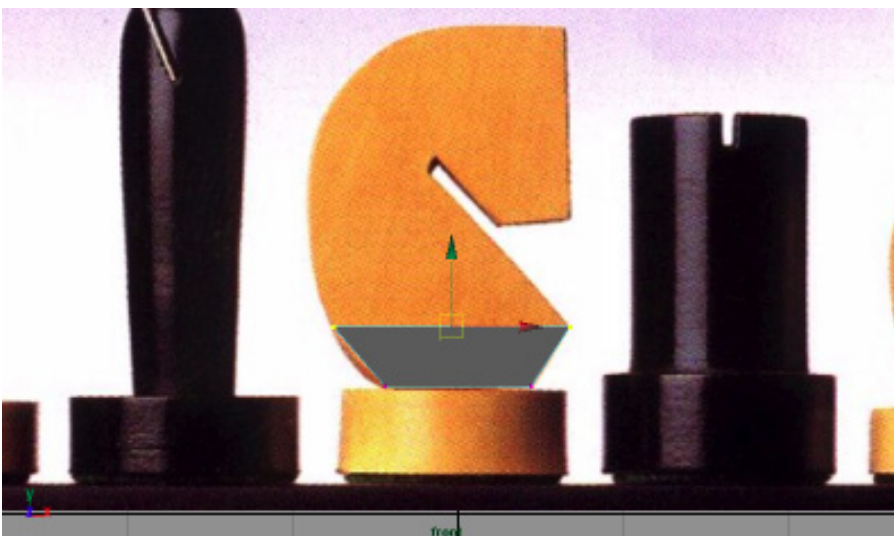
Another way of creating models that is much more intuitive is "Box Modelling" using Polygons. If you think of the Primitive object (in this and the majority of cases a Primitive Cube) as a lump of clay that can be moulded into any shape, you will see that with practice it's possible to create almost anything your imagination can conjure.

Make sure you're in Modelling mode in the Task Bar and go to Create> Polygon Primitives> Cube.



Make sure there are no Subdivisions in the Cube; If there are, click PolyCube1 in Channels and set Subdivisions Width, Height, Depth to 1, press 6 on the Keyboard to turn on Textured View. Position the Cube and image Plane (PolyPlane1) in the center of the viewport as you' ve done previously.

Scale the Cube so it fits the bottom of the horses neck that' s above the base (don' t worry about the base; We' ll make that later).

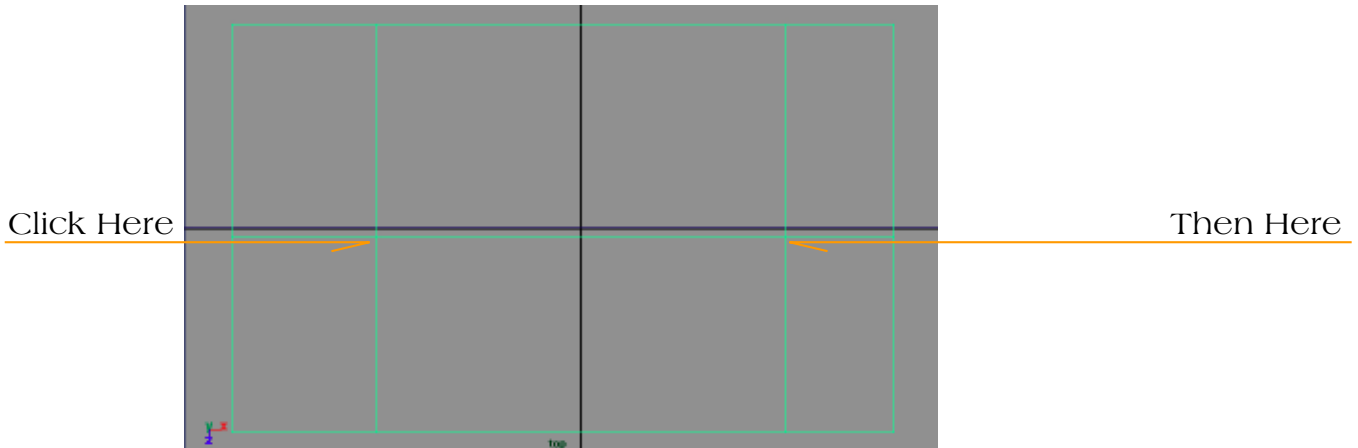


Right click over the Cube and select Vertex. Move them as shown below but remember that you need to select pairs of Vertices so marquee select to move them.

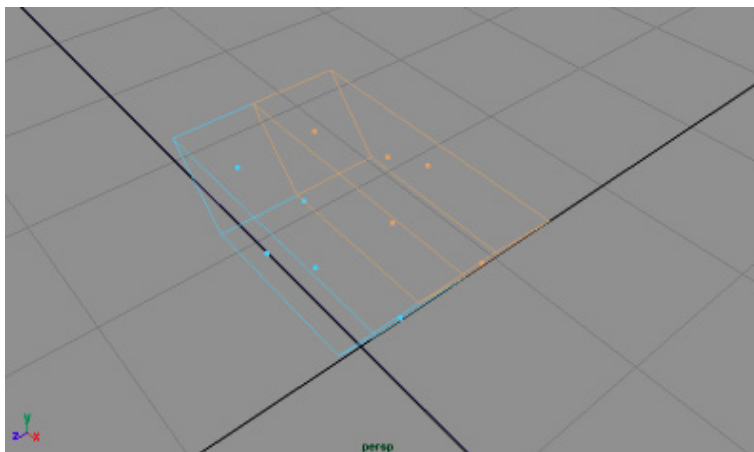
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In the Top Viewport, turn on Snap to Grid and Snap to View Planes, then in the Menu Bar go to Edit Polygons> Cut Faces Tool and click in the middle of one end of the Cube then in the middle of the other end and hit Enter on the keyboard.



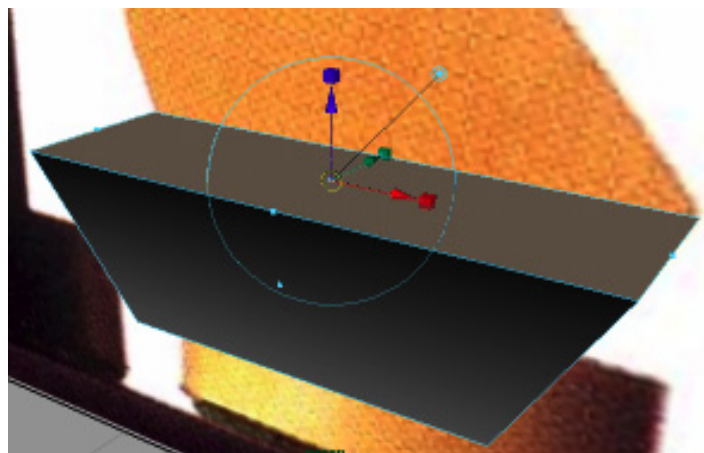
The Cut Faces Tool has sliced through the Cube Faces in the direction of the Top Viewport. Right click and select Faces; Marquee select the Faces as shown, then delete them.



Select the top face of the Cube then go to Menu Bar> Edit Polygons> Extrude Face. Notice that in the Tool Bar, below Scale Tool the Manipulator Tool is highlighted and that the Extrude Tool has Move, Scale, Rotate capabilities.

What this means is that this tool has multiple functions. In this case Move is the Extruding action but you can also Scale if you use the small boxes;

if you click the blue circle you can have full use of the Rotate Tool, clicking on the handle (the small circles on the line sticking out at an angle) will change direction. There're many tools that have manipulators that don't appear automatically so it's worth clicking on the Manipulator in the Tool Bar (or press T key on the keyboard) when you've selected a Tool.

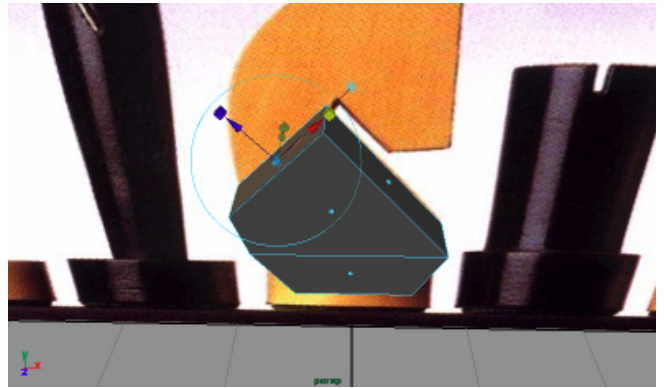


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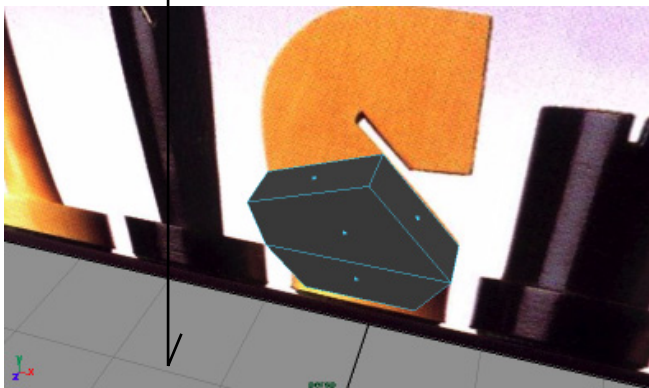
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Click on the blue circle to activate full use of the Scale Tool and Rotate the Face in the Z Axis as shown. Then Extrude at an angle using the Z (blue arrow) Axis and Scale in the X (red arrow) Axis following the contours of the Knight. When you've done the Extrusion click in empty space to de-select, then re-select the face, press G on the keyboard to call back Extrude Face Tool and continue the same process.

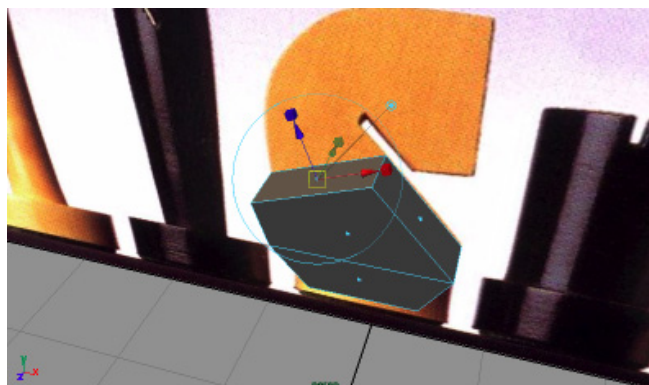
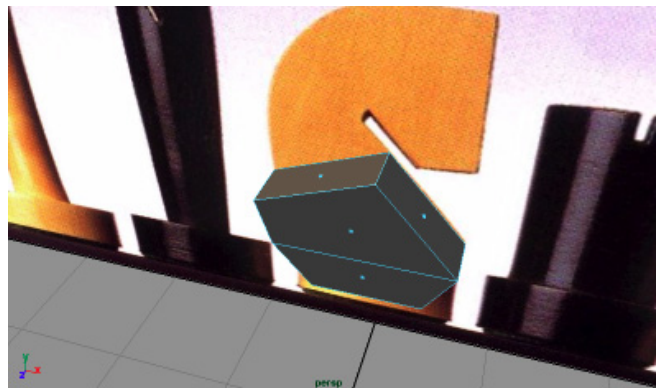
When alternating between the different Manipulator options it can seem that it's stuck in Rotate mode. To get back to the standard Extrude mode you had when the tool was first selected just double click on one of the Scale boxes. If you find the Extrude Manipulator too tricky the standard Scale, Rotate and Move Tools can also be used on Polygon Faces.



De-select the Face by clicking in empty space.



Re-select the Face.

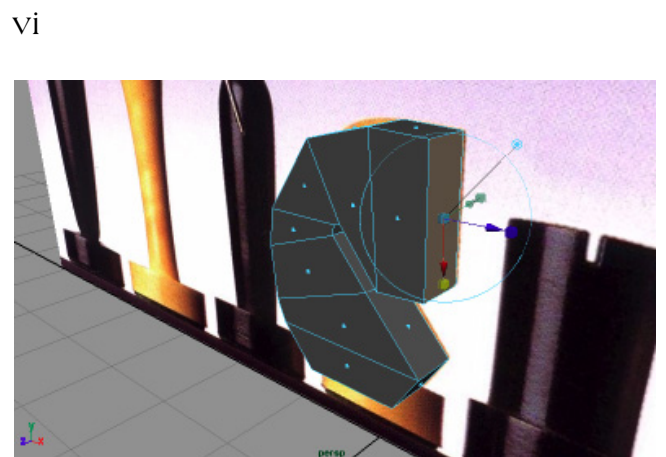
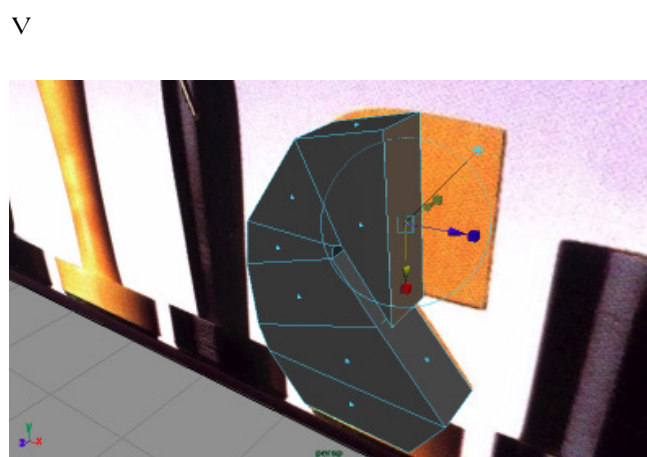
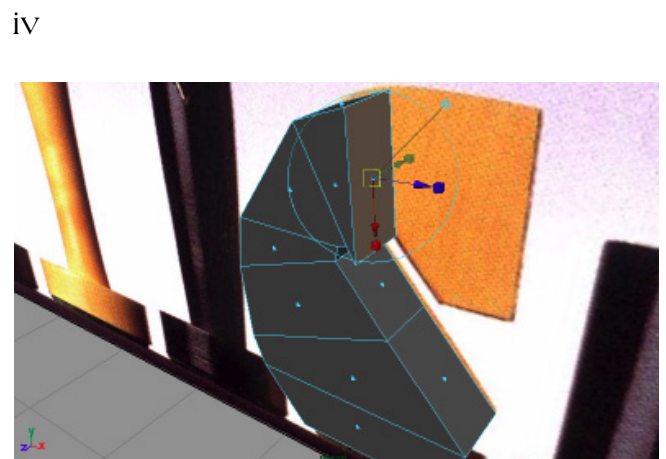
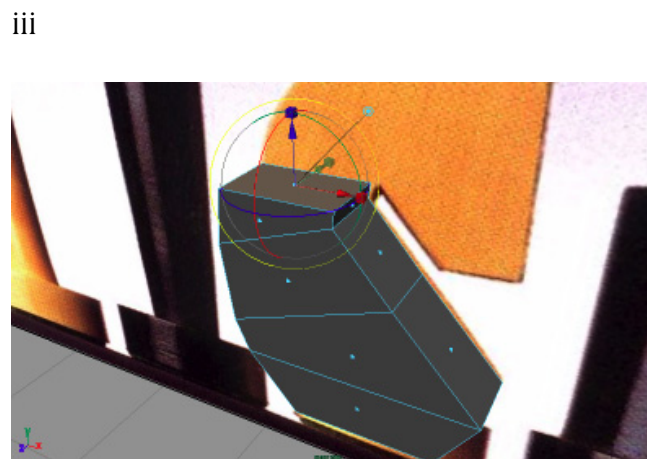
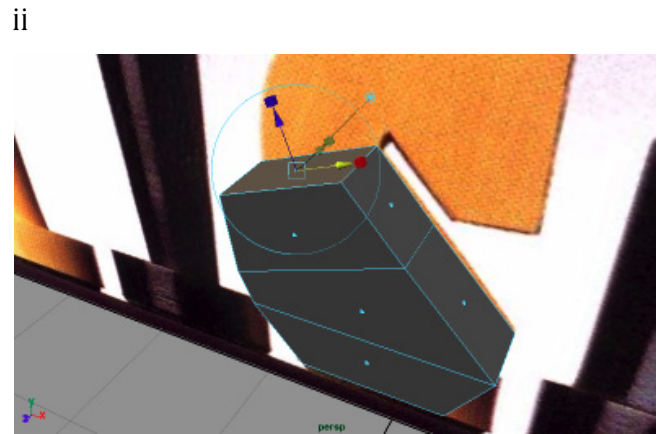
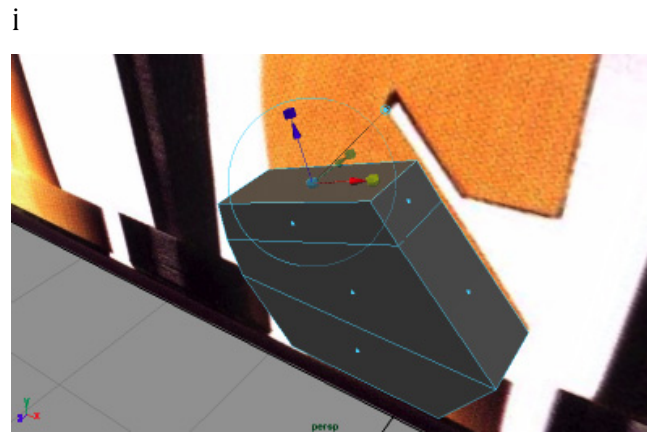


Press G on the keyboard to recall the Extrude Face Tool and continue the same process. Working in this methodical way should ensure consistent results. Don't worry too much about following the contours of the image exactly as you can fine tune the model after Extrusion by Selecting Vertices and moving them into the desired position.

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Continue in the same fashion until your model is complete as demonstrated.

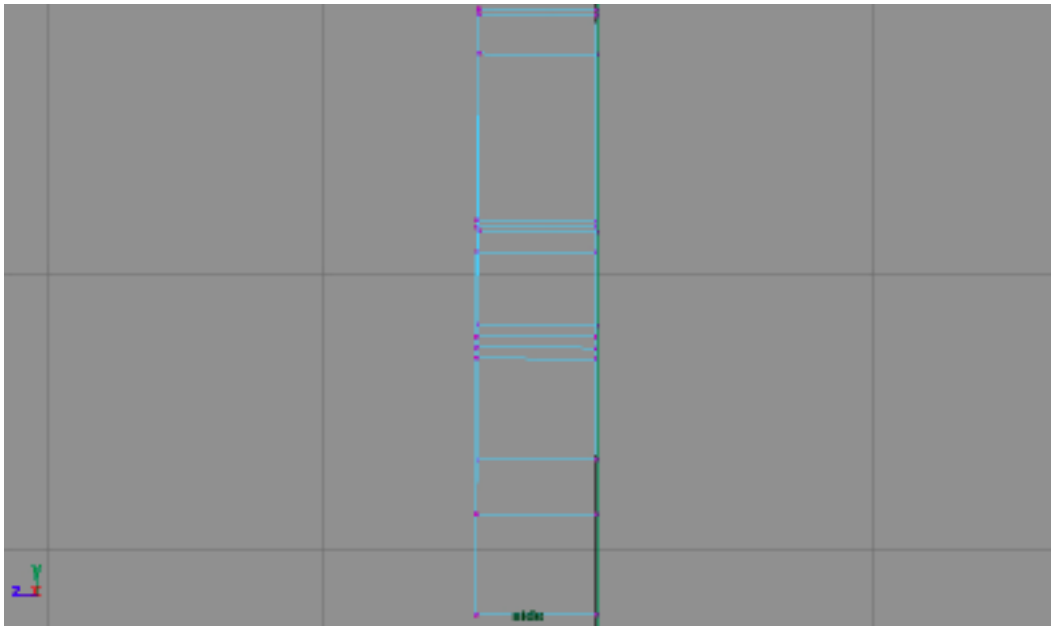


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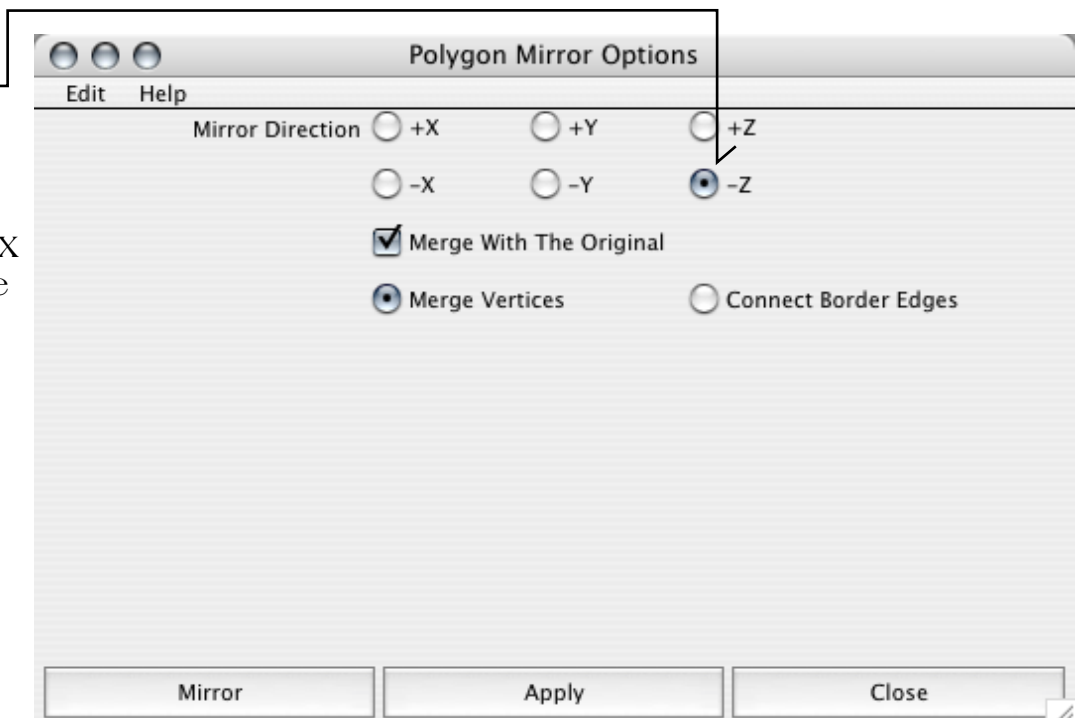
When you' ve finished this section of the model either hide the image plane (Menu Bar› Display› Hide› Hide Selection) or make it "live" (horseshoe magnet icon in the Task Bar) so you can see the side of the model that is facing the image plan.

In the Side Viewport make sure the part of the model that' s facing the image plan is straight; If it' s not, right click on the model, select Vertex and align them.



When you' ve finished straightening the Vertices come out of Component Mode (right click on the model slide down to "Select") and go to the Menu Bar› Polygons› Mirror Geometry (release the mouse button when it' s over the small box to open up Tool Options)

In Polygon Mirror Options click -Z button to set the Mirror Axis direction. By default it' s set to X Axis but as we' ve modelled our object from the front we need to adjust the tool options

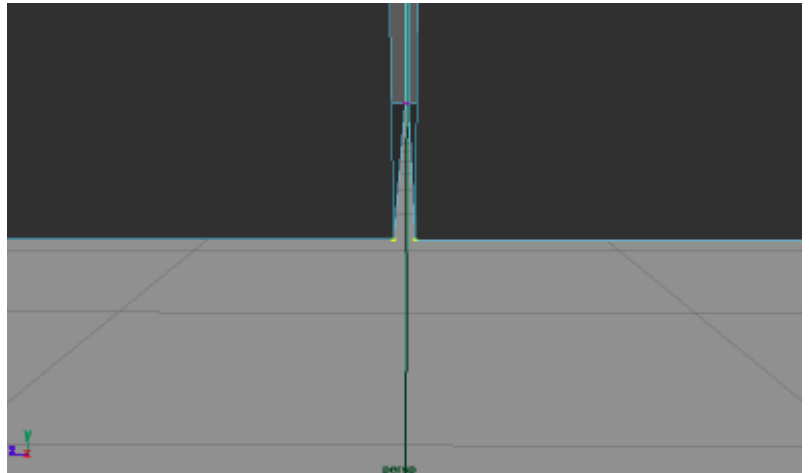


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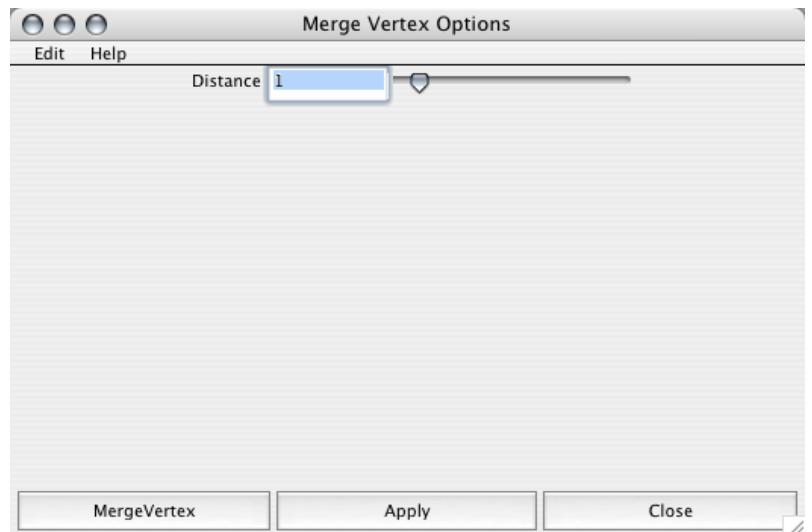
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The Mirrored copy should be attached to the original model. If it's not, the side where we deleted the Faces wasn't aligned straight enough. By zooming into the center of the model you'll see a gap between the two sections. If this has happened you'll need to join the Vertices of the two sections together.

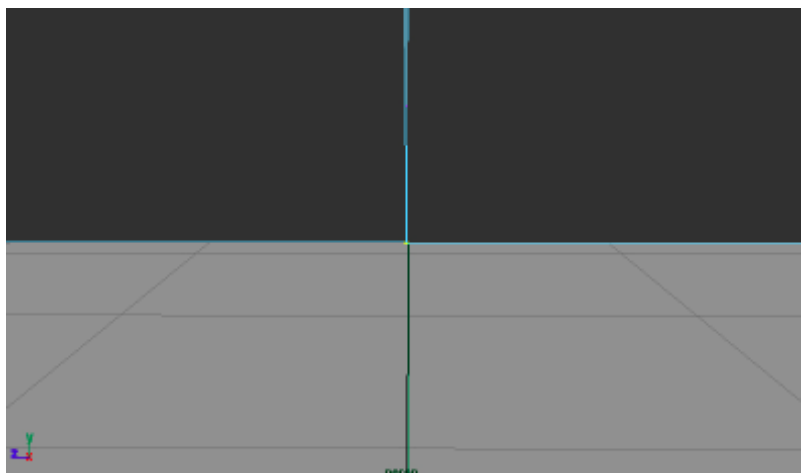
Right click on your model and select Vertex. Marquee select two vertices as shown.



In the Menu Bar go to Edit Polygons > Merge Vertices. Click on the small box to open the Options and set the value to 1. Click MergeVertex button.



The two Vertices have been joined together to make one vertex. Follow this procedure on all the vertices until the model is a complete whole. Make sure you're only selecting opposite pairs, check in Channels where it says "CVs (click to show)". After you've selected a pair of Vertices press G on the keyboard to repeat the action.



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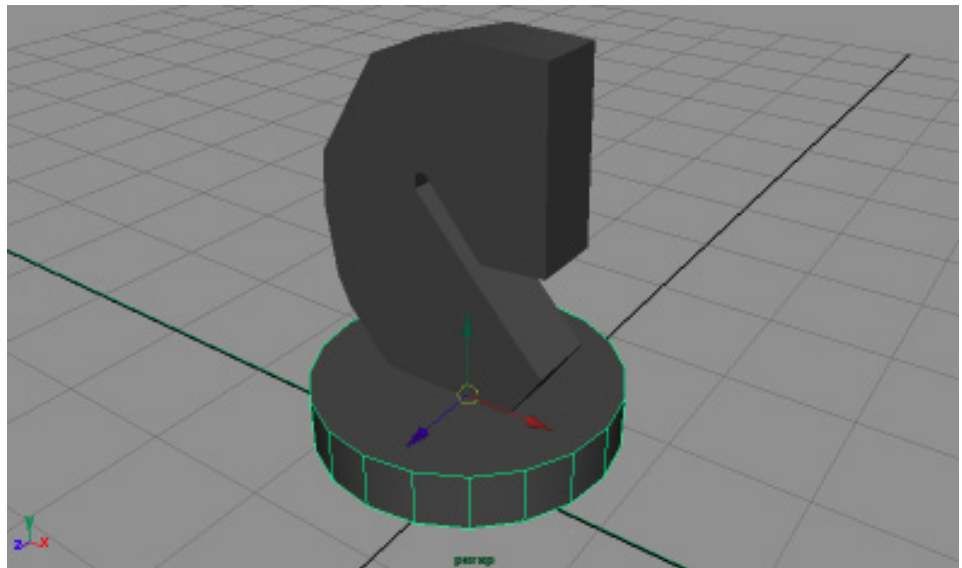
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When you've merged the model you might want to scale it to get it into better proportion. We now need to create the base. This could also be box modelled and might be something you want to try on your own as box modelling practice, however, it would be tricky getting the Extrusions to be symmetrically round. Another way is a technique you've already employed and that's to Boolean your model to a Primitive Cylinder.

Create and scale a Primitive Cylinder.

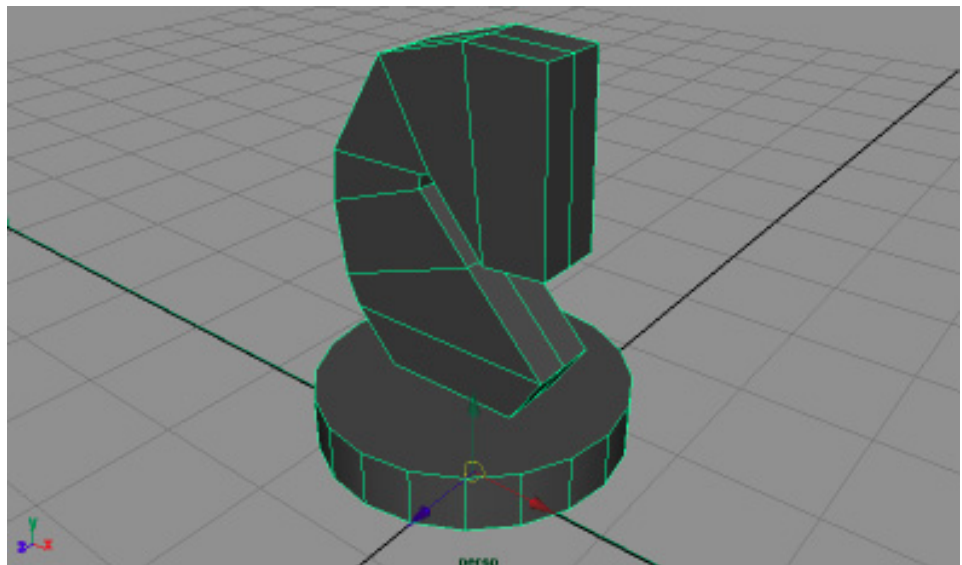
If you look at the reference image we've been using throughout these tutorials, the base of the models are all the same size so to keep the models in proportion with each other match the Cylinder to the image.

With this Chess Piece the Knight figurine looks too big for the base but if you size the base by eye to match the figurine it won't be in proportion with your other models.



When you've Scaled the base to size, select the Knight figurine then shift select the base and as you did previously go to Booleans › Union.

The Model is complete the final thing to do is with your Knight selected go to the Menu Bar › Edit › Delete by Type › History. If, however you want to review the modelling stages in Channels then don't delete History.



Maya has very powerful Polygon modelling tools and this technique of Box Modelling is a common method that can be applied in any 3D Programme. It's a flexible approach that you could use to create the entire Chess set and almost anything else your imagination can conjure.