Course 2 - Mesh and vertex editing II

In this course we are continuing with editing meshes and learn to work with some new Blender meshes as well.

Basic meshes

Before you start drawing your 3D-model, you need to keep in mind which primitives help you to create the basis of your 3D-model. For example, our house of Course 1 was build out of the "cube" mesh.

Blender contains the following basic meshes: Plane, Cube, Circle, UVSphere, Icosphere, Cylinder, Tube, Cone, Grid and Monkey.

Figure 1 shows all the renderable meshes. A circle for example is not visible when rendering.

The mesh Monkey is the mascot of Blender and is named Suzanna. You can use this mesh as a ready-to-use mesh which might be useful when checking materials.

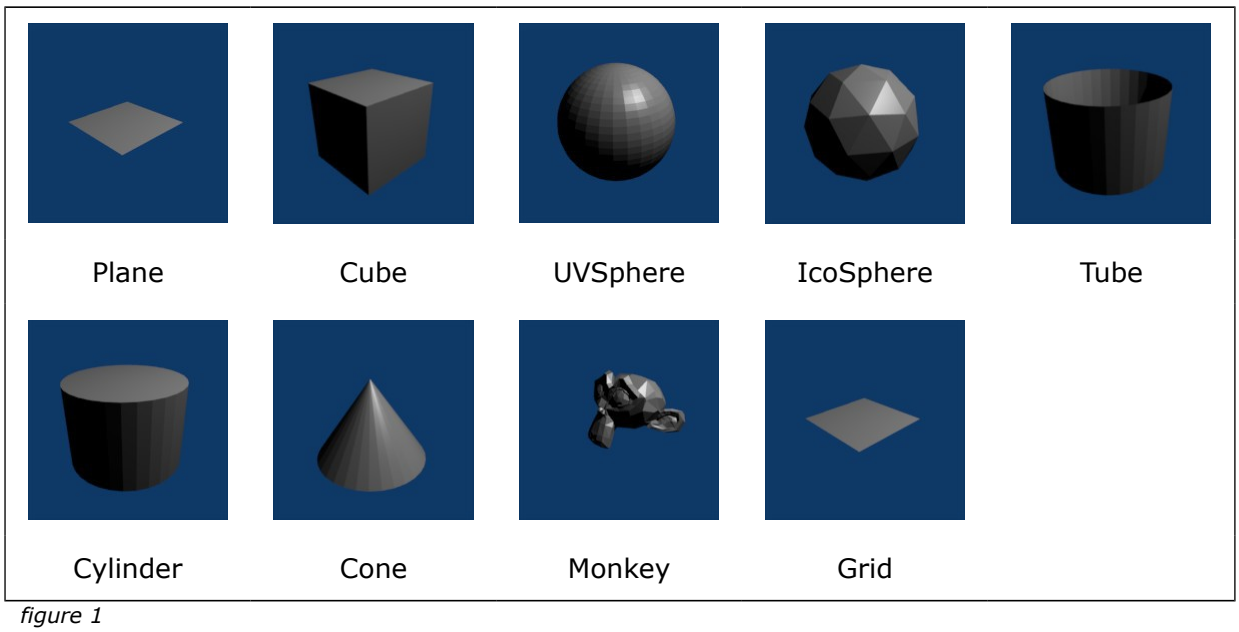

figure 1

Creating a pill

In this chapter we are about to make a pill (figure 2).

figure 2

The first question we can ask ourselves: which basic meshe(s) are we going to use for making this pill? A logical answer would be a Cylinder with two UVSpheres on each end. Instead, we are going to use only one mesh: the UVSphere.

➔ Start Blender.

➔ Choose File → New (figure 3) or press <Ctrl> + <N>.

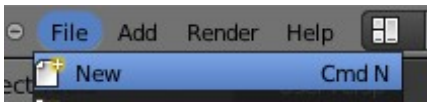

figure 3

➔ Click with the right mousebutton on the cube in order to select the cube.

➔ Press <X> to delete the cube.

A menu appears (figure 4).

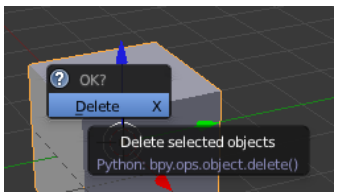

figure 4

➔ Choose [Delete].

The cube is deleted now.

➔ From the top menu choose Add → Mesh → UV Sphere (figure 5).

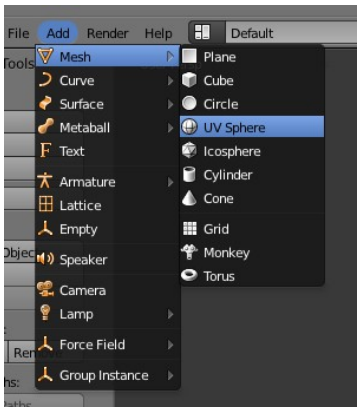

figure 5

You have now added a sphere to your scene (figure 6). We are now going to make one half of the pill.

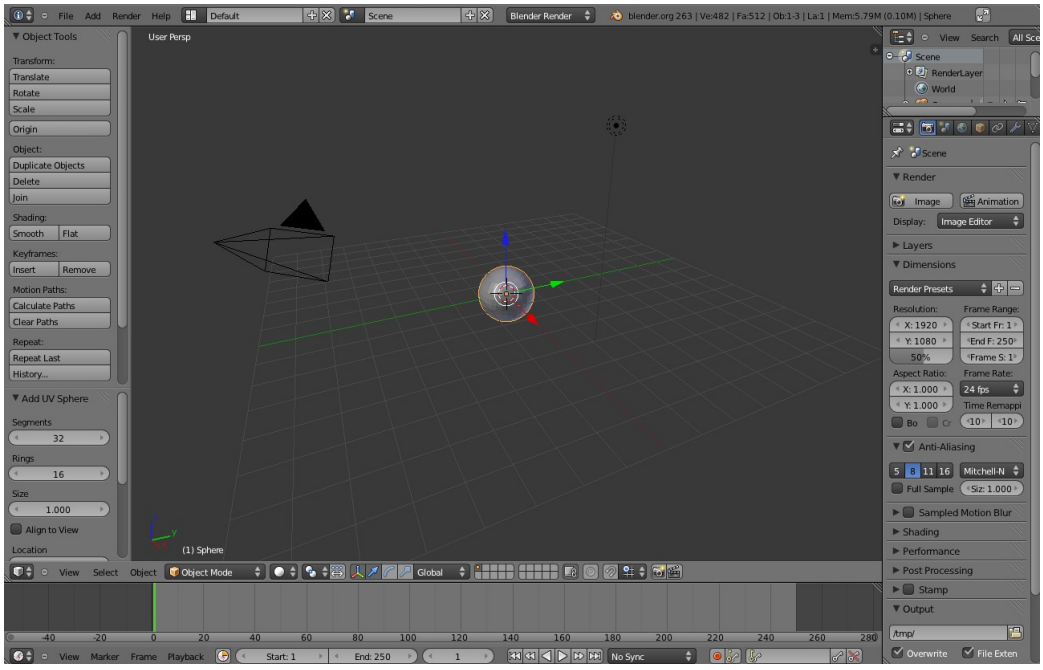

figure 6

➔ Press <1> in order to switch to the Front View.

➔ Press <5> to switch from Orthographic to Perspective mode

Sometimes you do not need the properties menu. You can maximize a view by pressing <Ctrl> + <↑>. Pressing <Ctrl> + <↑> again switches you back.

➔ Hide the properties menu by pressing <Ctrl> + <↑>.

The Front View is maximized now (figure 7).

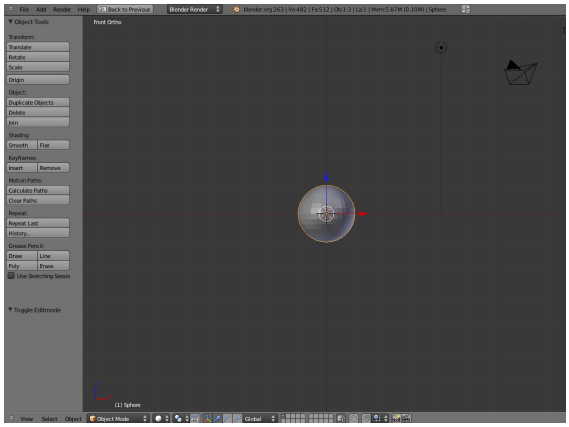

figure 7

➔ Press <Z> to switch to wireframe mode

➔ Zoom in (Scrollwheel up) till the sphere takes about 25% of the view. (figure 8).

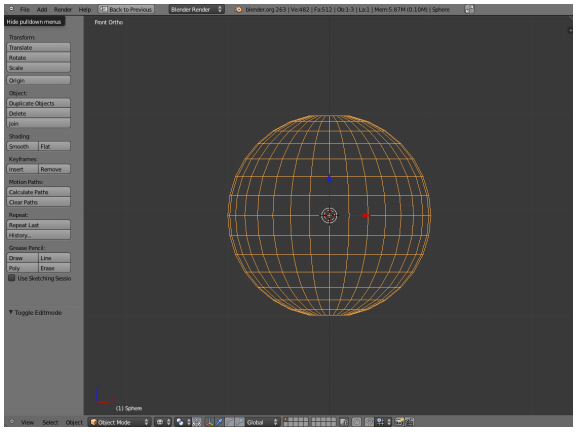

figure 8

In order to select multiple vertices we are using **Block Select**. You use block select by pressing <B> while in Edit Mode. If you hold down your left mousebutton, you can drag a rectangle around the vertices. All vertices in this rectangle will be selected (yellow coloured are the selected ones).

In Edit Mode you can press <A> to select or deselect all vertices.

➔ Press <Tab> to switch to Edit Mode

➔ Press <A> to deselect all vertices.

➔ Press <B> and drag a rectangle around all the vertices right from the centre-line (figure 9).

Do not select the centre line itself, only the vertices on the right side of it!

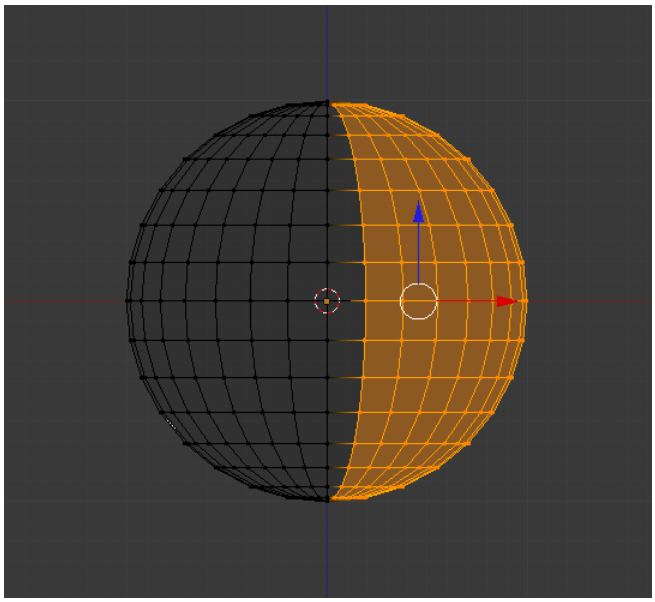

figure 9

➔ Press <X>

A menu appears (figure 10).

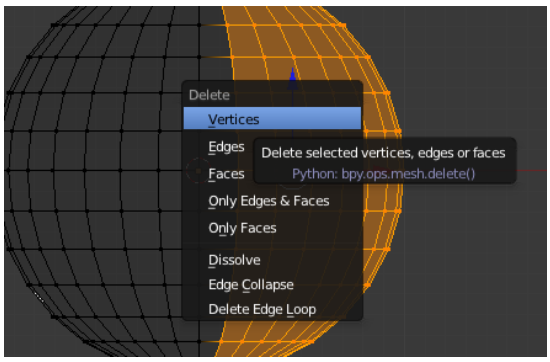

figure 10

➔ Choose [Vertices]

You are now seeing half a sphere (figure 11).

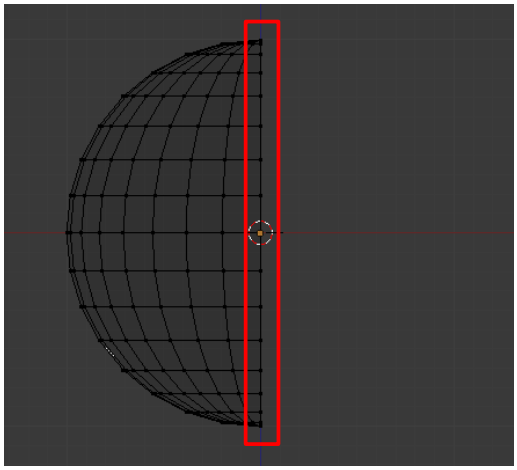

figure 11

- Select with <B> the rightmost row of vertices (marked red in figure 11).
- Press <E> for Extrude.
- Press <X> to lock the X-axis.
- Move the mouse to the right.

In the bottom left of the view is displayed how for the "pill" is stretched (figure 12).

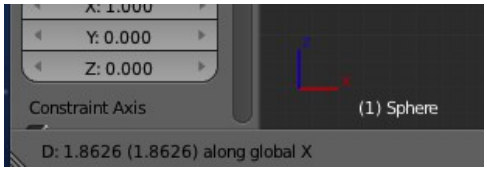

figure 12

This number has an accuracy of five decimals. Precisely adjust to 3.0000 is hard.

- Press <ESC> to cancel the Extrude operation.
- Press <E> again
- Press <3>

The bottom left of the view menu bar shows 3 (figure 13).

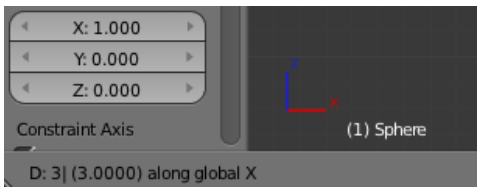

figure 13

➔ Press <Enter> to finish the Extrude operation.

➔ Zoom out with your <Scrollwheel> till the half covers your view.

You are now having half a pill (figure 14).

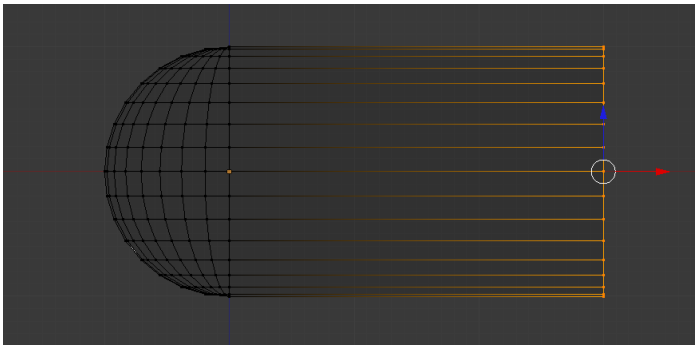

figure 14

➔ Press <0> for Camera View

➔ Press <Z> to switch to solid viewport shading.

You can see the pill is still hollow (figure 15).

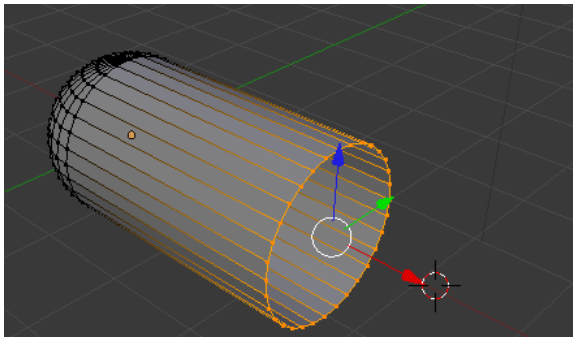

figure 15

➔ Click in the viewport menubar at [Mesh]

A menu appears (figure 16).

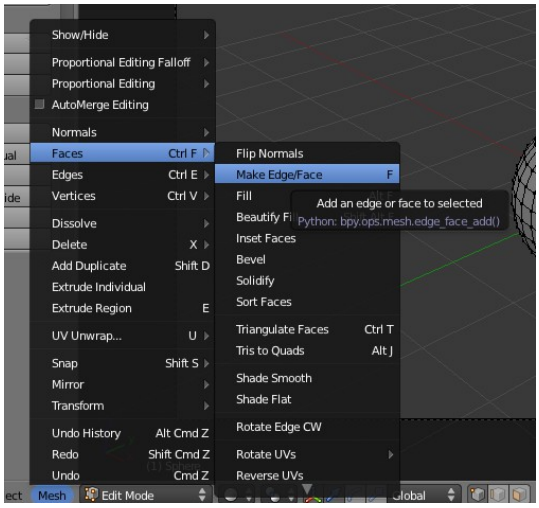

figure 16

➔ Choose Faces → Make Edge/Face or press <F>

The 3D View now shows a "closed" pill (figure 17).

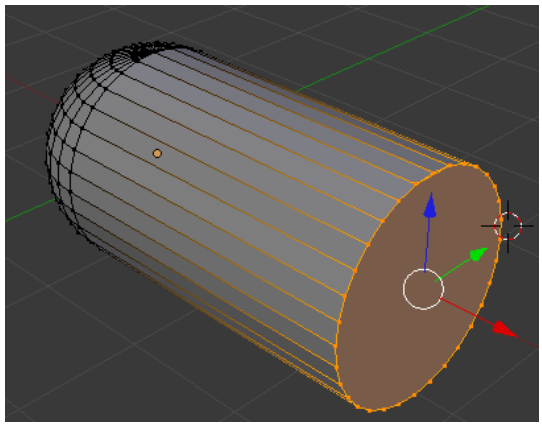

figure 17

➔ Save your work as bc02.01.blend (<Ctrl> + <S>).

The left part of our pill is ready, now we are continuing with the right part.

➔ Press <7> to switch back to the Front View

➔ Use <Ctrl> + Scrollwheel in the Front View for moving the pill to the left side of the screen (figure 18).

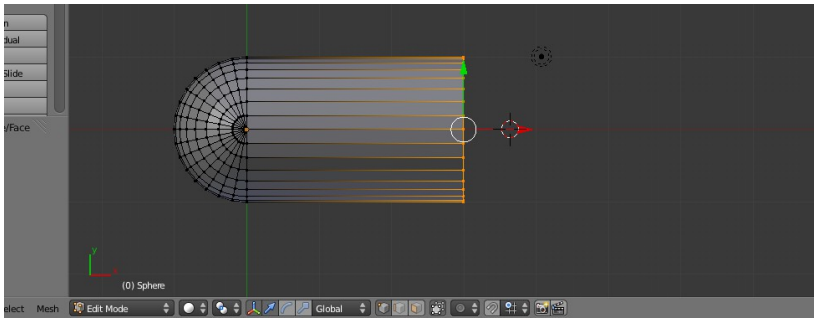

figure 18

➔ Press <Tab> for Object Mode.

➔ Press <Z> for wireframe viewport shading.

➔ Press <Shift> + <D> to duplicate the mesh.

➔ Press <Enter> to confirm the duplication.

The pill is now duplicated, but the duplications are still on top of each other.

➔ Press <R> for rotate.

➔ Type <1> <8> <0> to rotate the half pill 180 degrees and press <Enter>.

There are now two half pills over each other (figure 19).

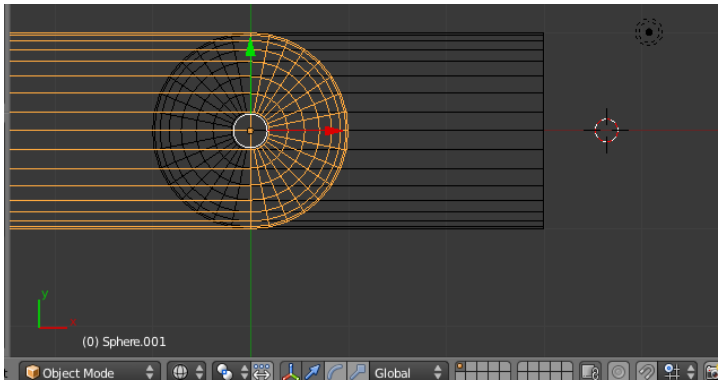

figure 19

➔ Press <G> to move the mesh.

➔ Type <6> and press <Enter>.

The meshes are now tight together (figure 20).

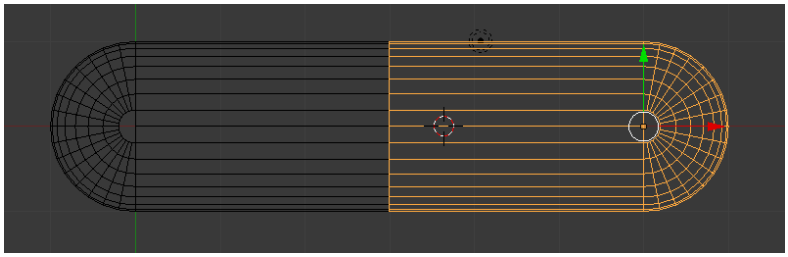

figure 20

Figure 21 shows the red part of the pill is slightly bigger than the white part. We can achieve this by using the scale method.

figure 21

➔ Select the right part of the pill.

➔ Press <S> for scale.

➔ Type <1> <.> <1> and press<Enter>.

The Front View shows the right part bigger than the left one (figure 22). Because of the scaling the two parts overlap each other.

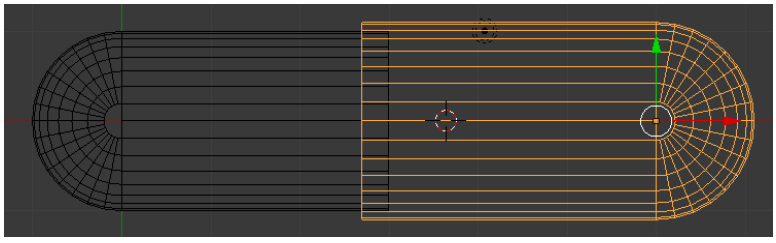

figure 22

➔ Press <G> for move.

➔ Press <X> to lock the X-axis.

➔ Type <0> <.> <3> and press <Enter>.

Materials

Blender uses **materials**. A material describes properties of a material such as colour, reflection, softness and structure. Course 6 describes materials in more detail.

➔ Select the right part of the capsule.

➔ Press <Ctrl> + <↑> to show the properties panel.

➔ Click on the sphere icon for the material tab.

The Material Panel appears (figure 23).

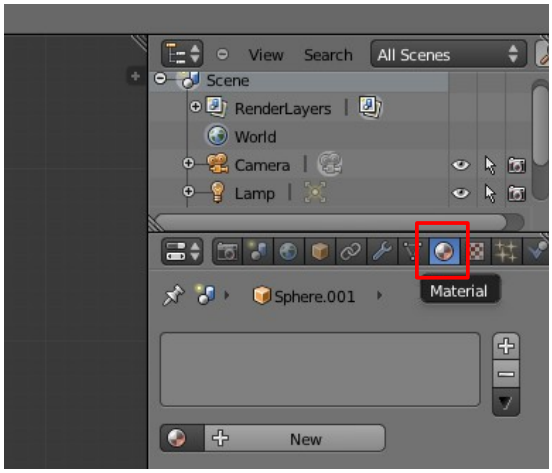

figure 23

➔ Click at [+ New] to add a new material.

You have now added a new material. A new panel appear (figure 24).

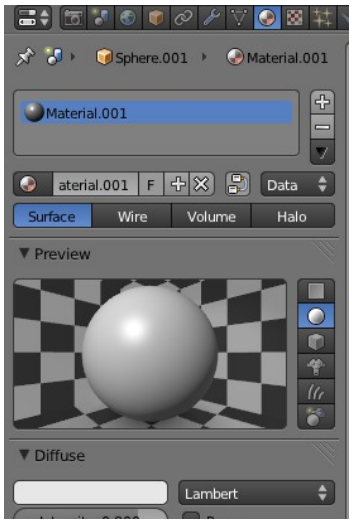

figure 24

The materials preview is shown in the Preview Panel. The colour of this object is grey. The name is "Material.001".

➔ Click in the textbox which shows the name (marked red in figure 24) and change Material.001 into Red.

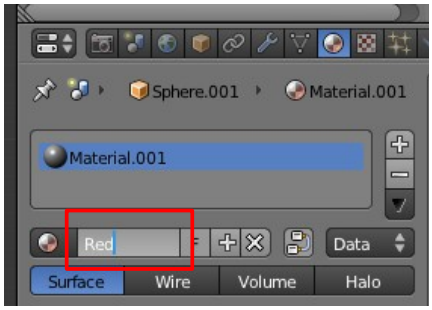

figure 24

Each colour consists of three primitive colours: red, green, blue.

➔ Click on the white area under the diffuse header (figure 25).

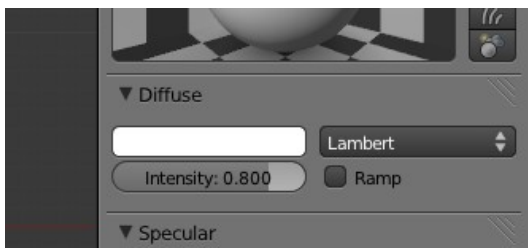

figure 25

A colourpicker pops up (figure 26).

➔ Drag the sliders to the following values: R at 1.000, G at 0.000 and B at 0.000.

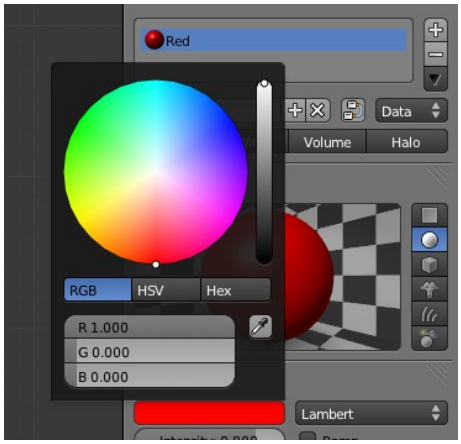

figure 26

➔ Now select the left part of the pill and make a material called “White” with the values: R at 1.0, G at 1.0 and B at 1.0.

➔ Click on the material panel to close the colourpicker

➔ Press <Z> for solid viewport shading

You now see a white and a red part op the pill:

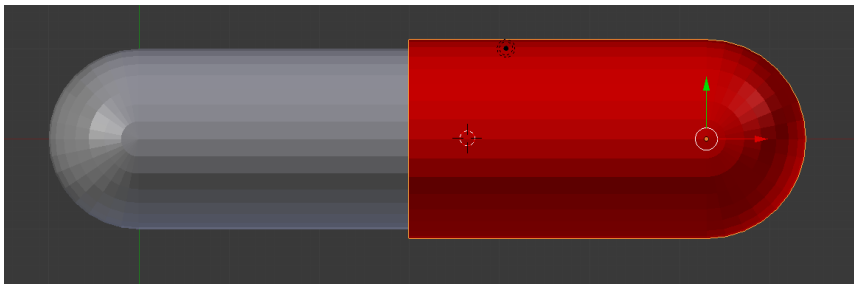

figure 27

➔ Press <0> for the Camera View

You see the pill is not centred in the camera.

➔ Press <7> for the Top View

➔ Zoom out so you can see the camera

➔ Select the camera with the right mousebutton.

➔ Press <G> to move the camera.

➔ Move the camera in a so the whole pill is displayed in the Camera View.

➔ Save your work (<Shift> + <Ctrl> + <S>) as bc02.02.blend

➔ Press <F12> to render your model. If everything worked out fine the image should look like figure 28.

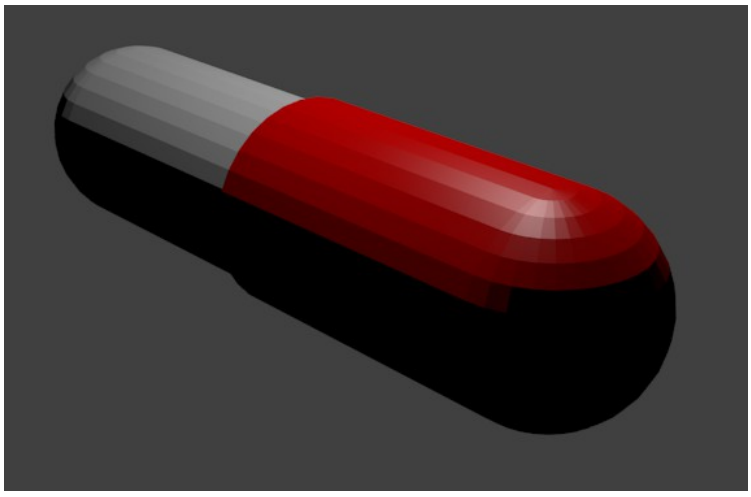

figure 28

Everything looks serrated. Blender has a technique called **smoothing**. This makes your object smoother. The "smoother" your object, the longer it takes to render.

➔ Select the red part of the pill.

➔ From the Tools Panel select [Smooth] under the shading header (marked red in figure 29).

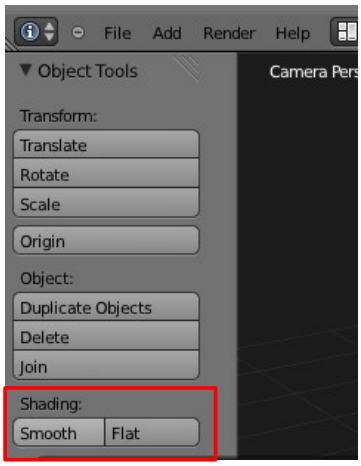

figure 29

➔ Set smooth shading for the white part as well.

➔ Press <F12> to render.

You can see the red part is a lot smoother than the white part (figure 34).

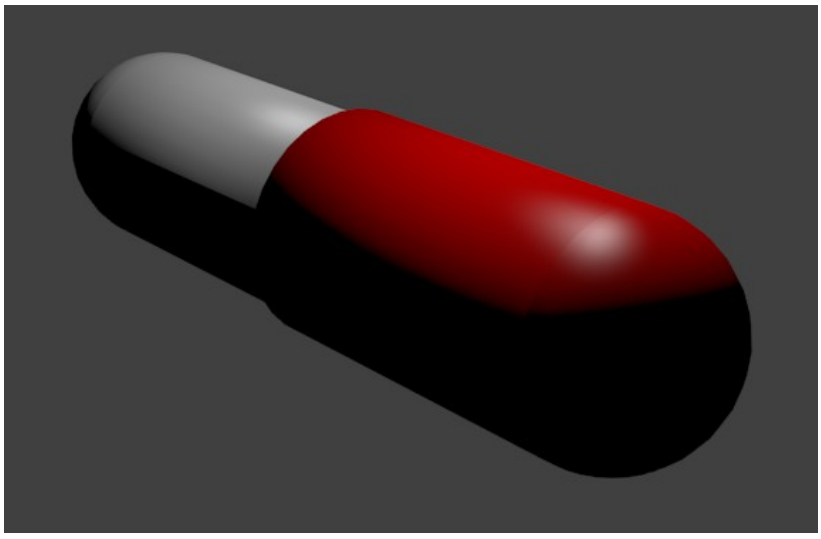

figure 30

➔ Save your work (<Shift> + <Ctrl> + <S>) as bc02.03.blend

The challenge

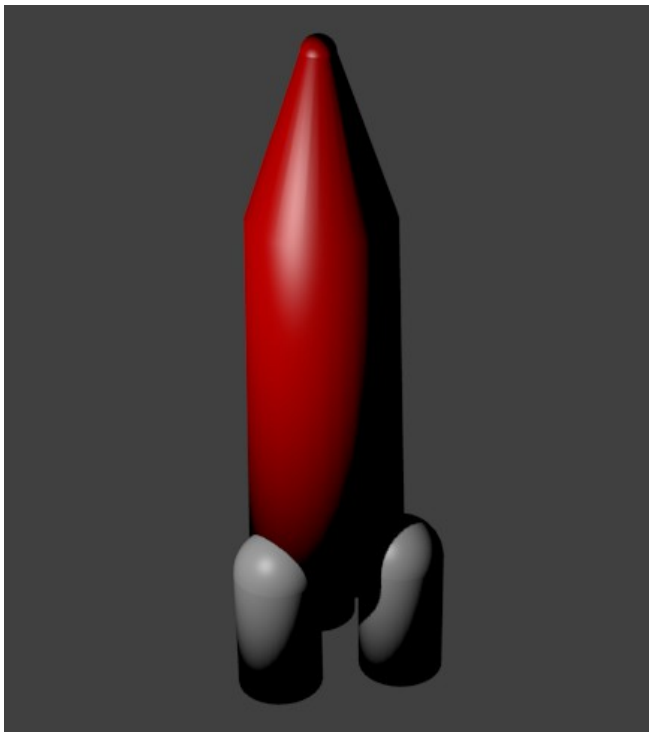

figure 36 – rocket – bc02.04.blend

Skills from this course

- Recognizing basic meshes
- Vertex editing
- "Smooth" objects
- Entering coordinates manually
- Naming and recognising Materials
- Changing the Material colour