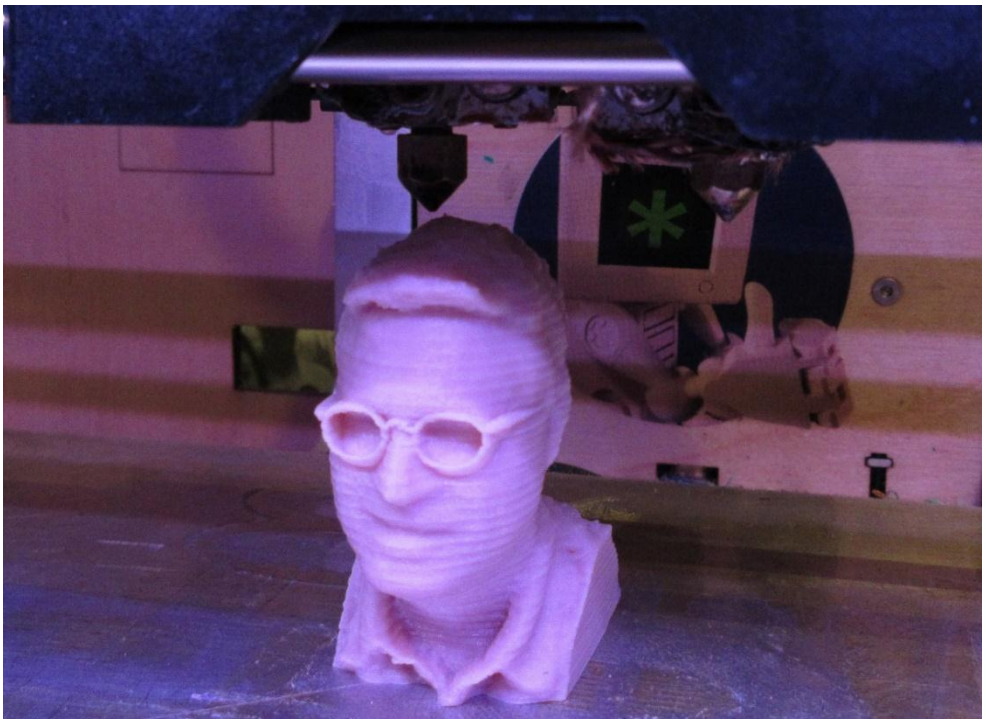
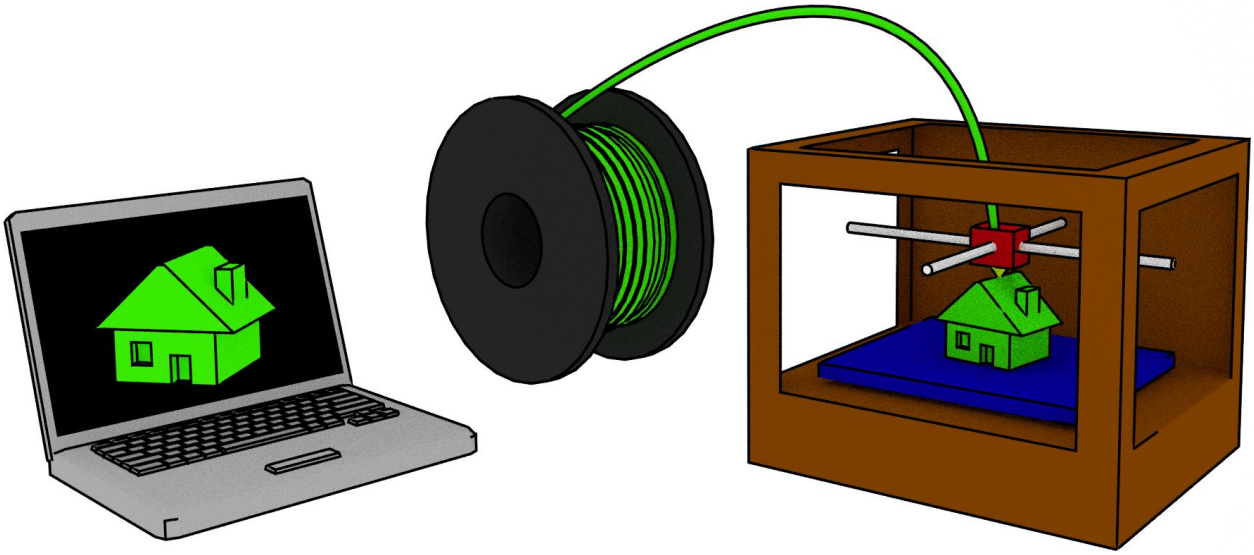
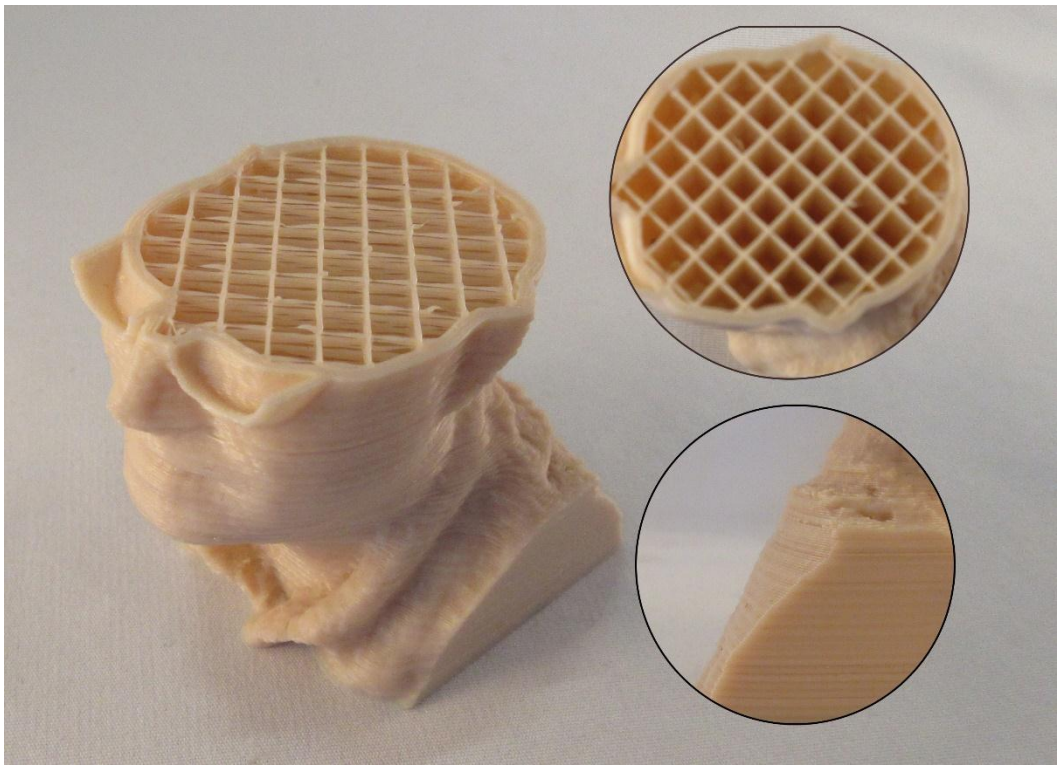
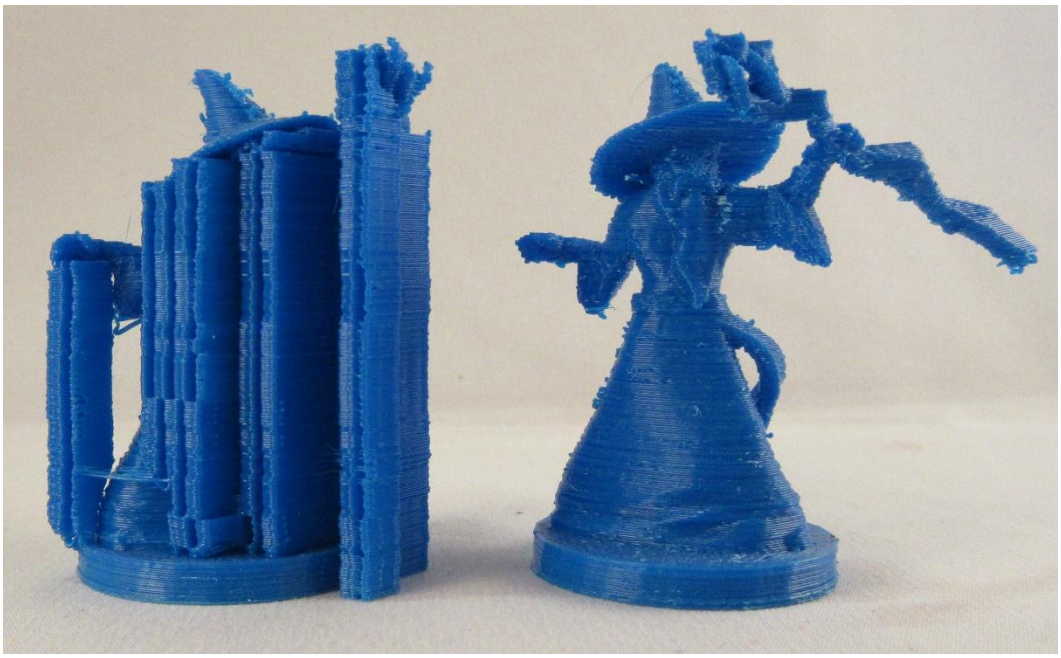
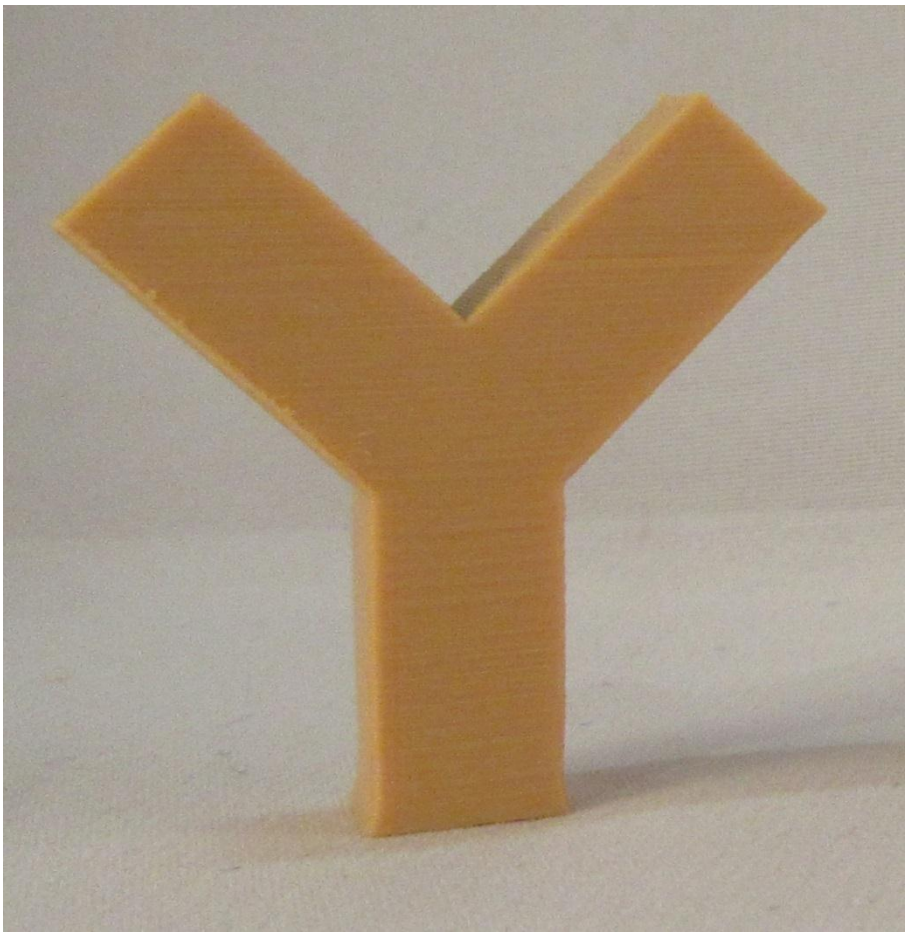
Chapter 1: 3D Printing Basics

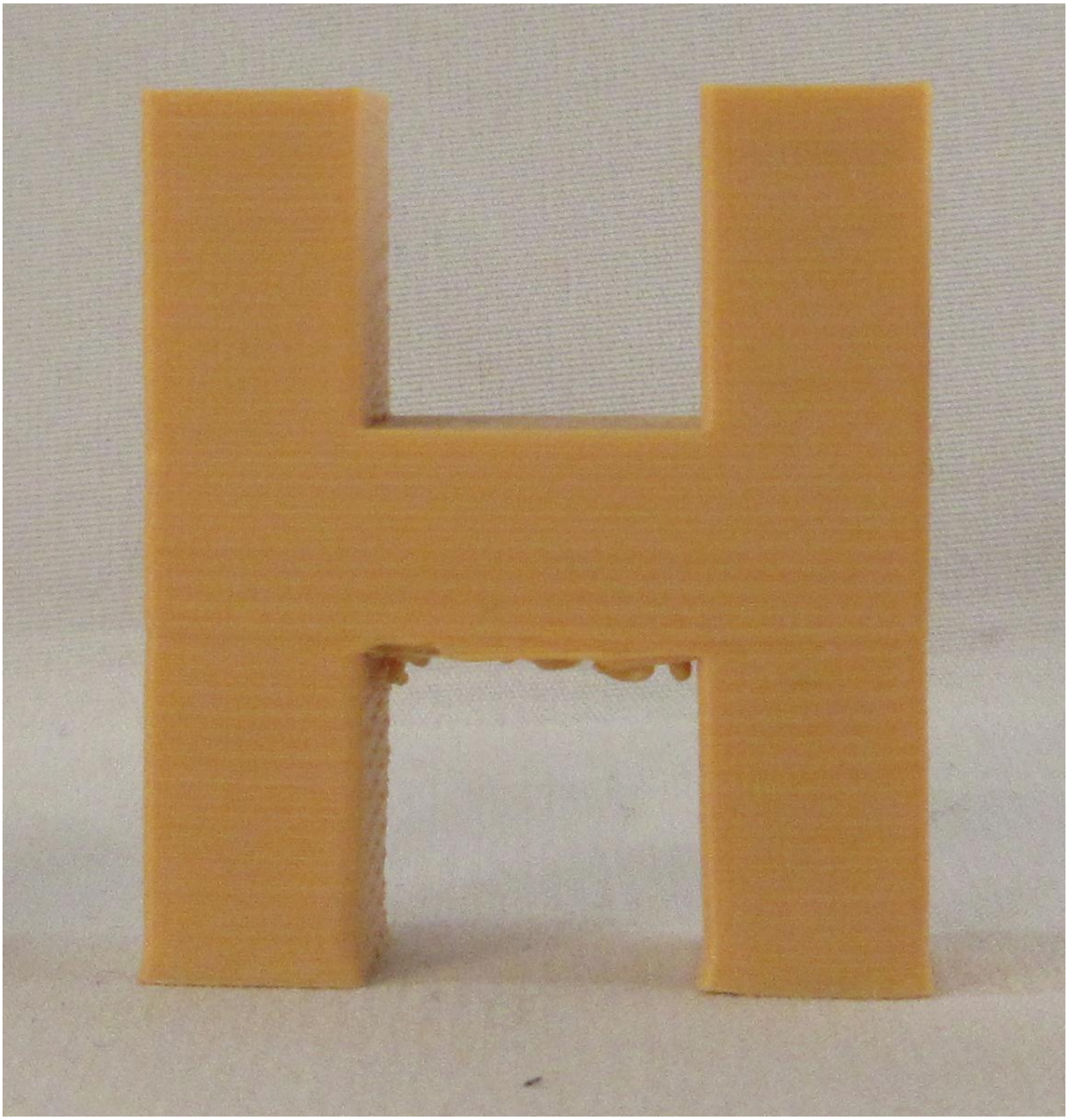


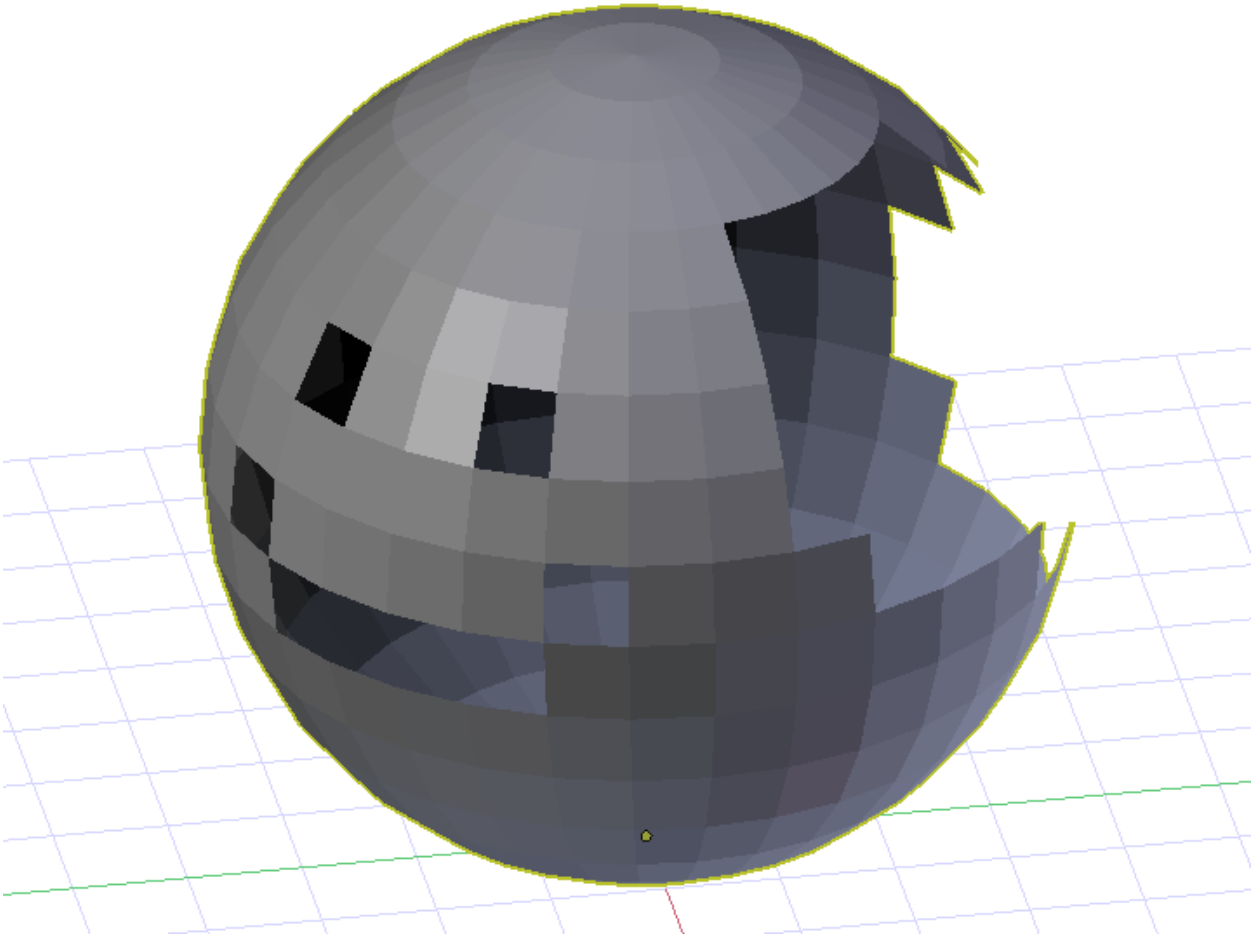


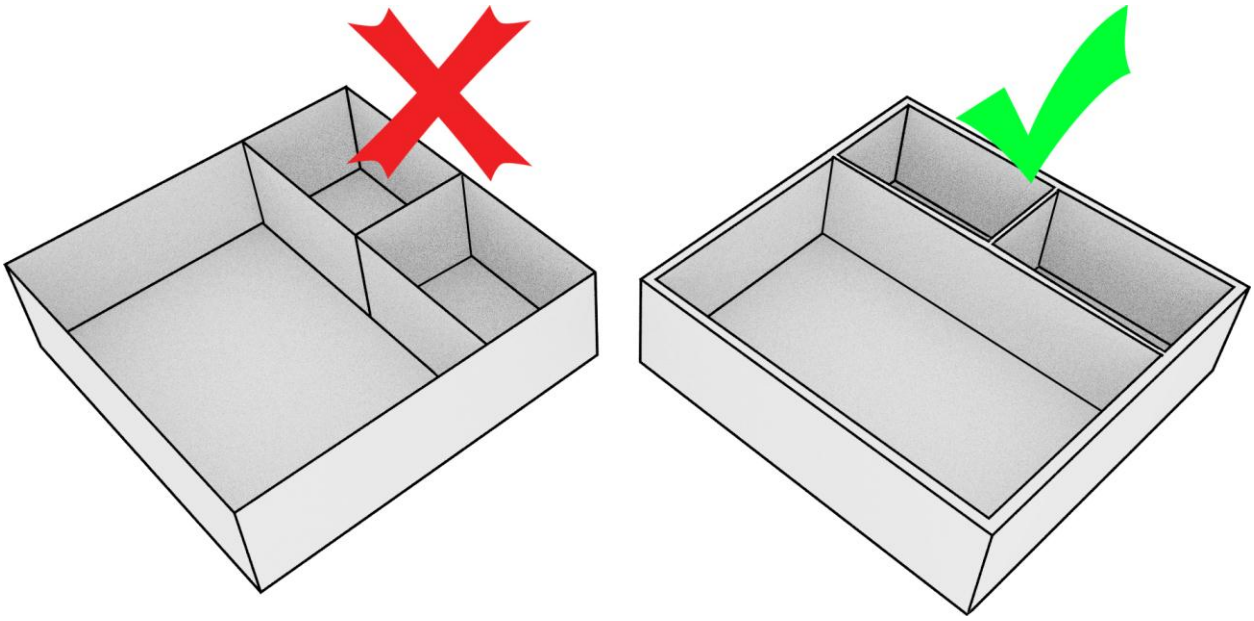




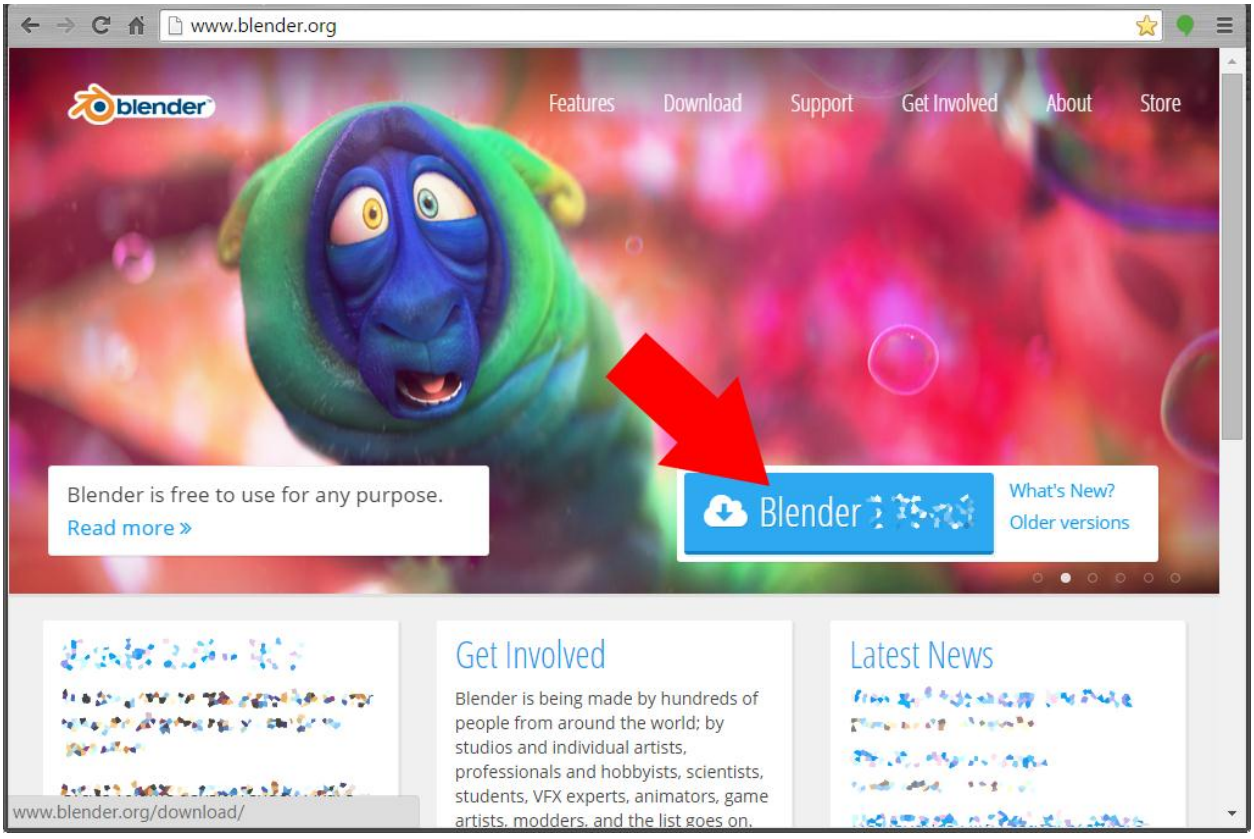


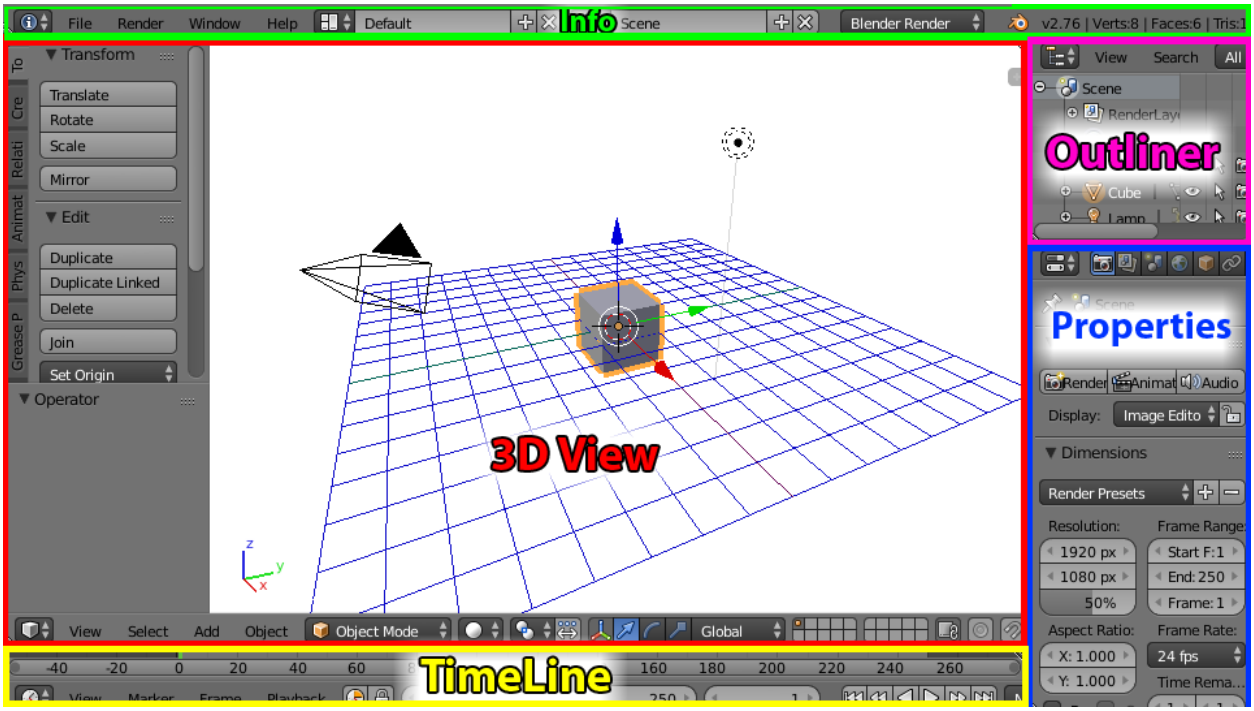


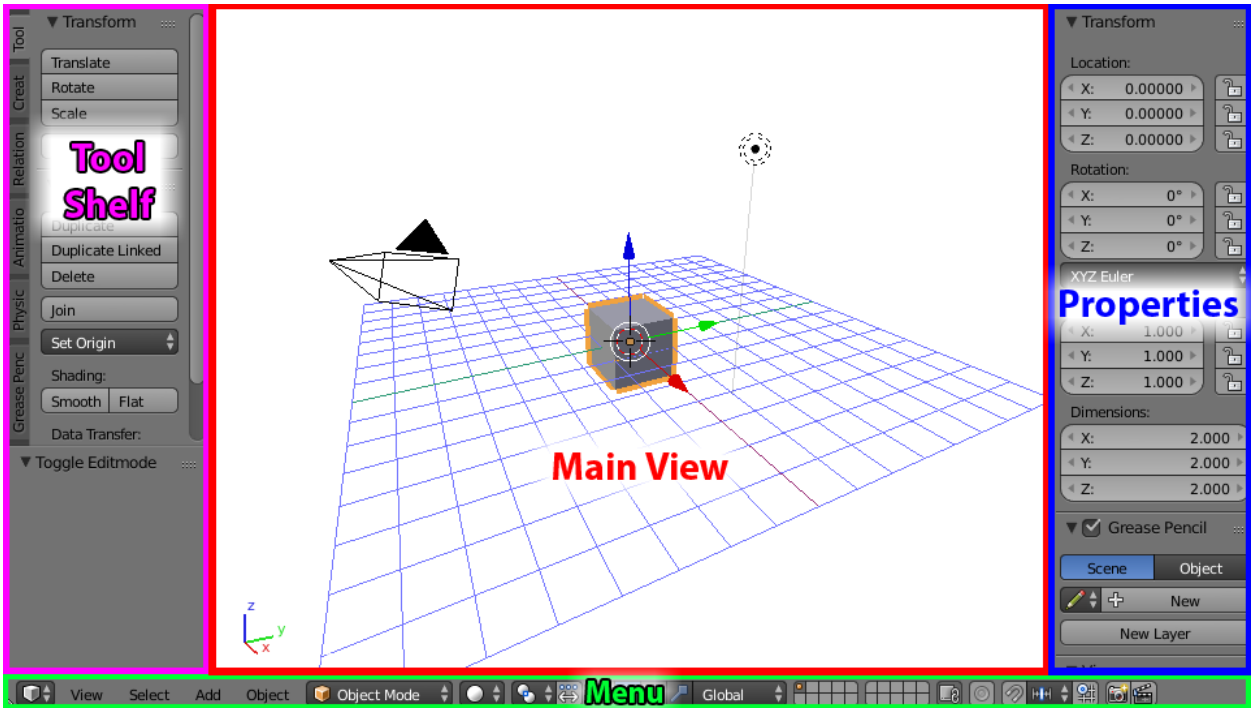


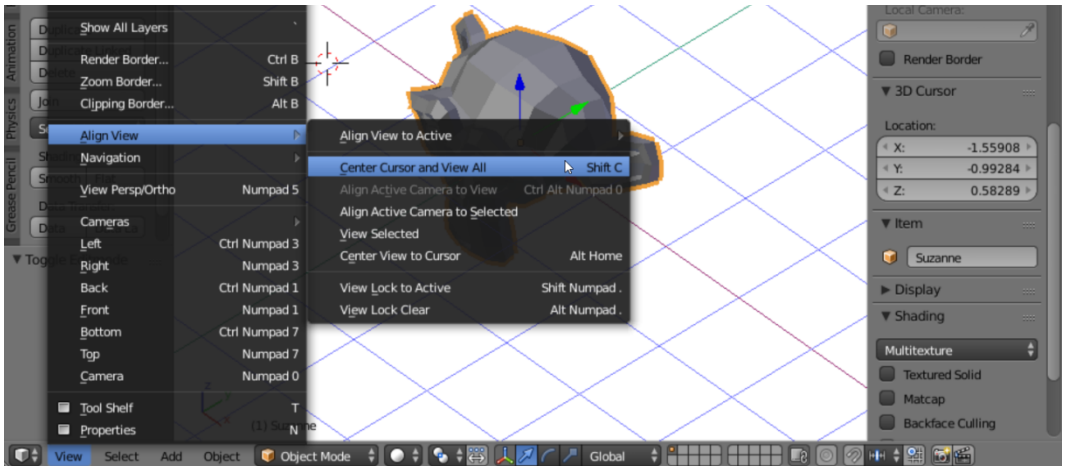


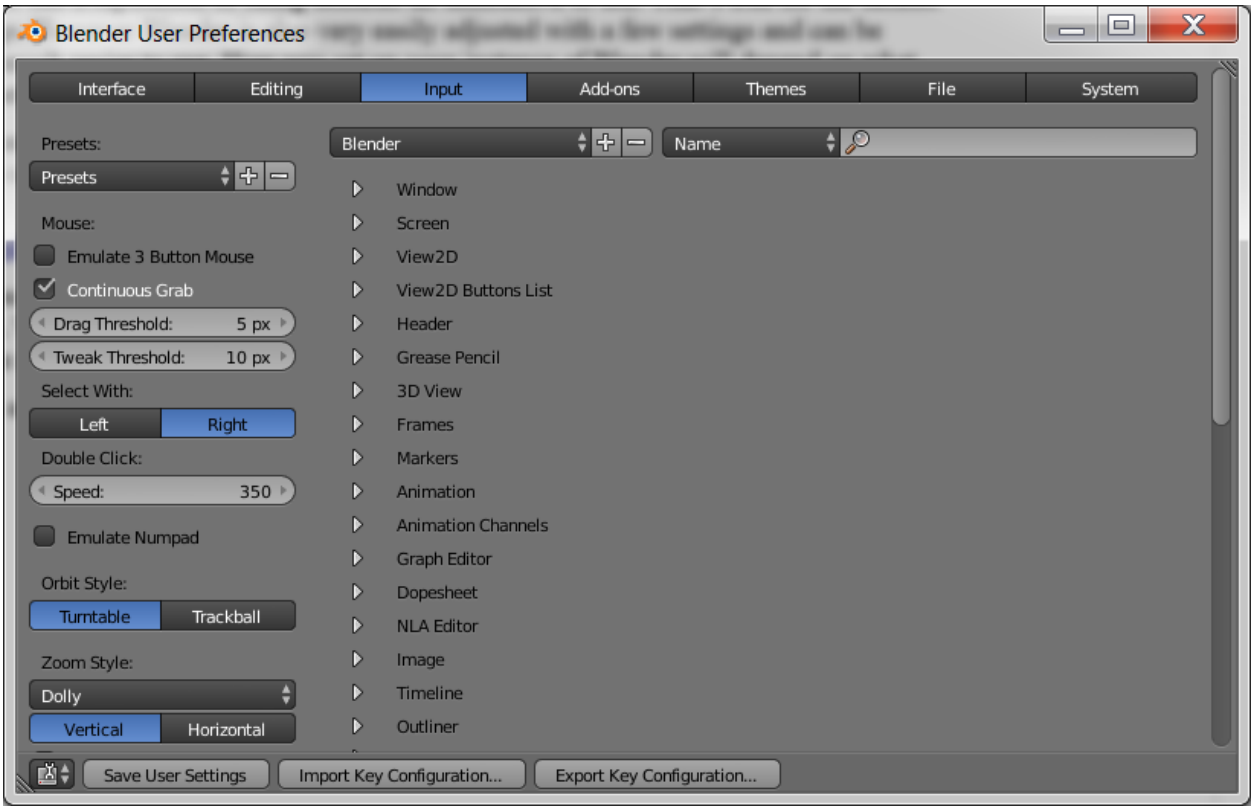
Chapter 2: Beginning Blender

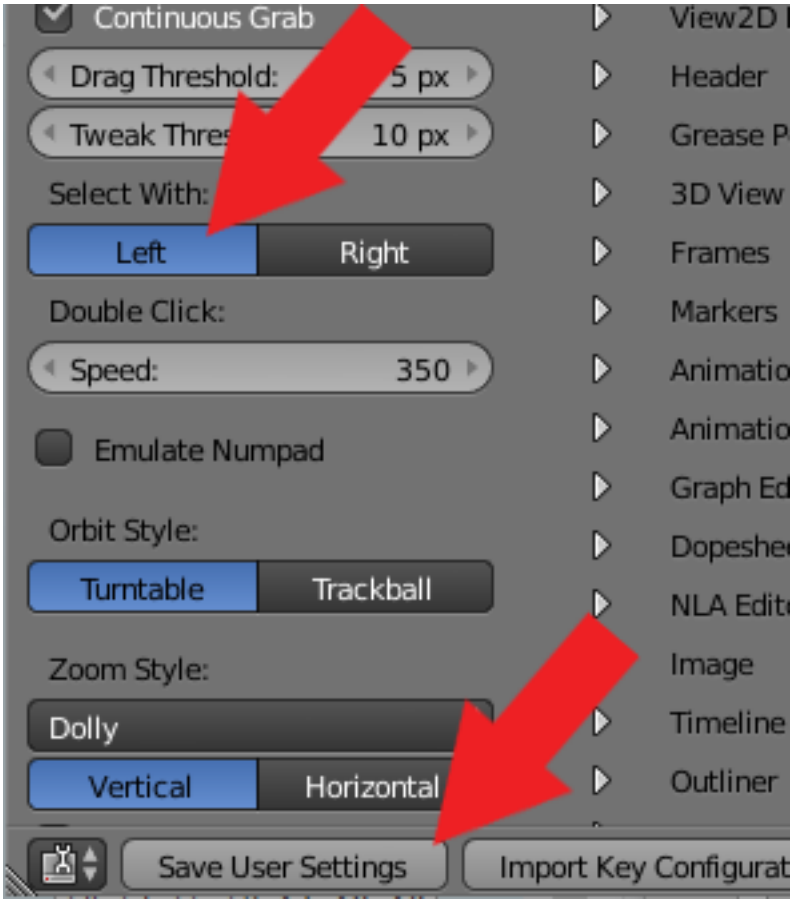


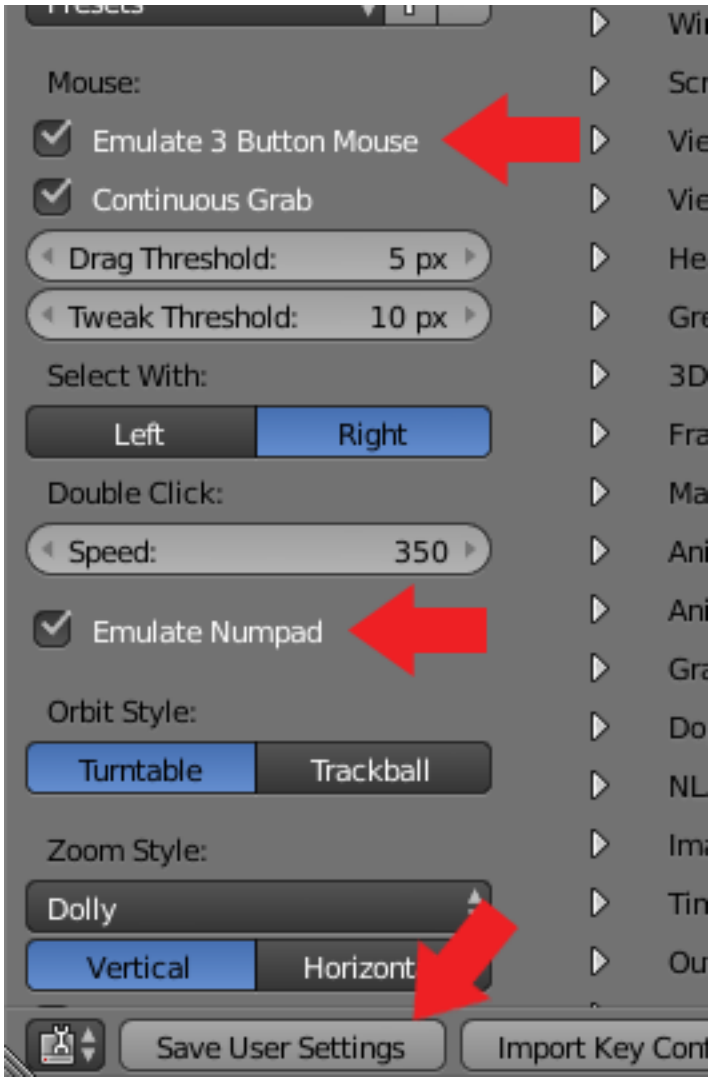


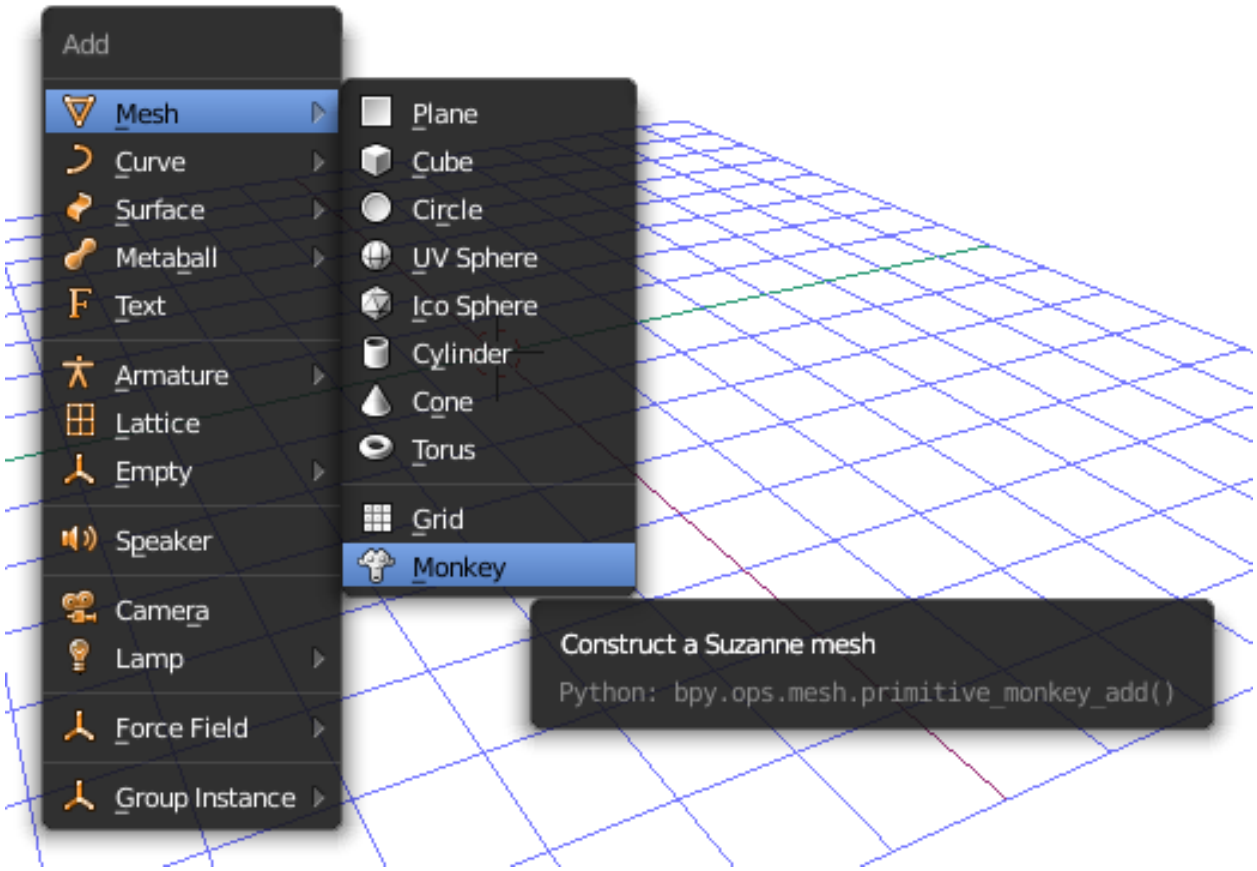

Transform
Translate
Rotate
Scale
Tool Shelf
Duplicate Linked
Delete
Join
Set Origin
Shading:
Smooth
Flat
Data Transfer:
Toggle Editmode
Main View
Transform
Location:
X: 0.00000
Y: 0.00000
Z: 0.00000
Rotation:
X: 0°
Y: 0°
Z: 0°
XYZ Euler
Properties
X: 1.000
Y: 1.000
Z: 1.000
Dimensions:
X: 2.000
Y: 2.000
Z: 2.000
Grease Pencil
Scene
Object
New
New Layer
View
Select
Add
Object
Object Mode
Menu
Global

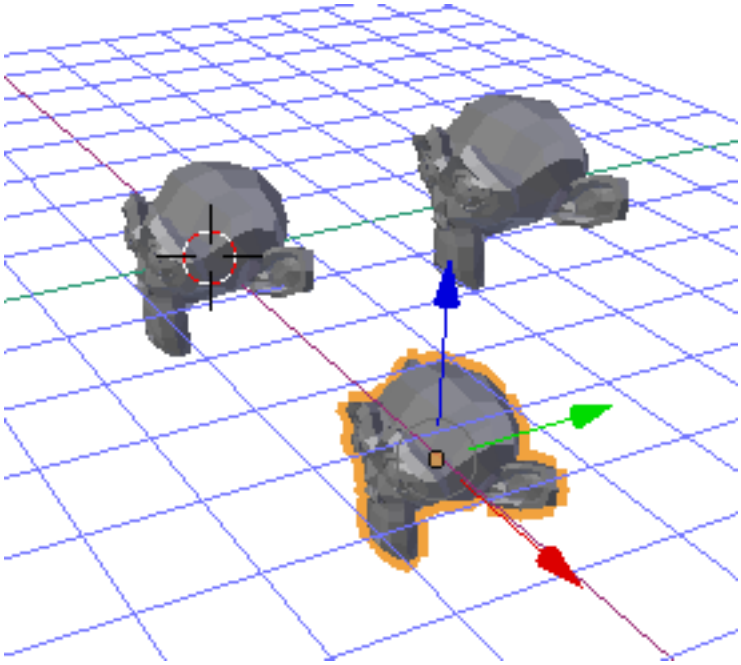

Show All Layers
Render Border... Ctrl B
Zoom Border... Shift B
Clipping Border... Alt B
Align View
Navigation
View Persp/Ortho Numpad 5
Cameras
Left Ctrl Numpad 3
Right Numpad 3
Back Ctrl Numpad 1
Front Numpad 1
Bottom Ctrl Numpad 7
Top Numpad 7
Camera Numpad 0
Tool Shelf T
Properties N
Align View to Active
Center Cursor and View All Shift C
Align Active Camera to View Ctrl Alt Numpad 0
Align Active Camera to Selected
View Selected
Center View to Cursor Alt Home
View Lock to Active Shift Numpad .
View Lock Clear Alt Numpad .
Render Border
3D Cursor
Location:
X: -1.55908
Y: -0.99284
Z: 0.58289
Item
Suzanne
Display
Shading
Multitexture
Textured Solid
Matcap
Backface Culling
View
Select
Add
Object
Object Mode
Global

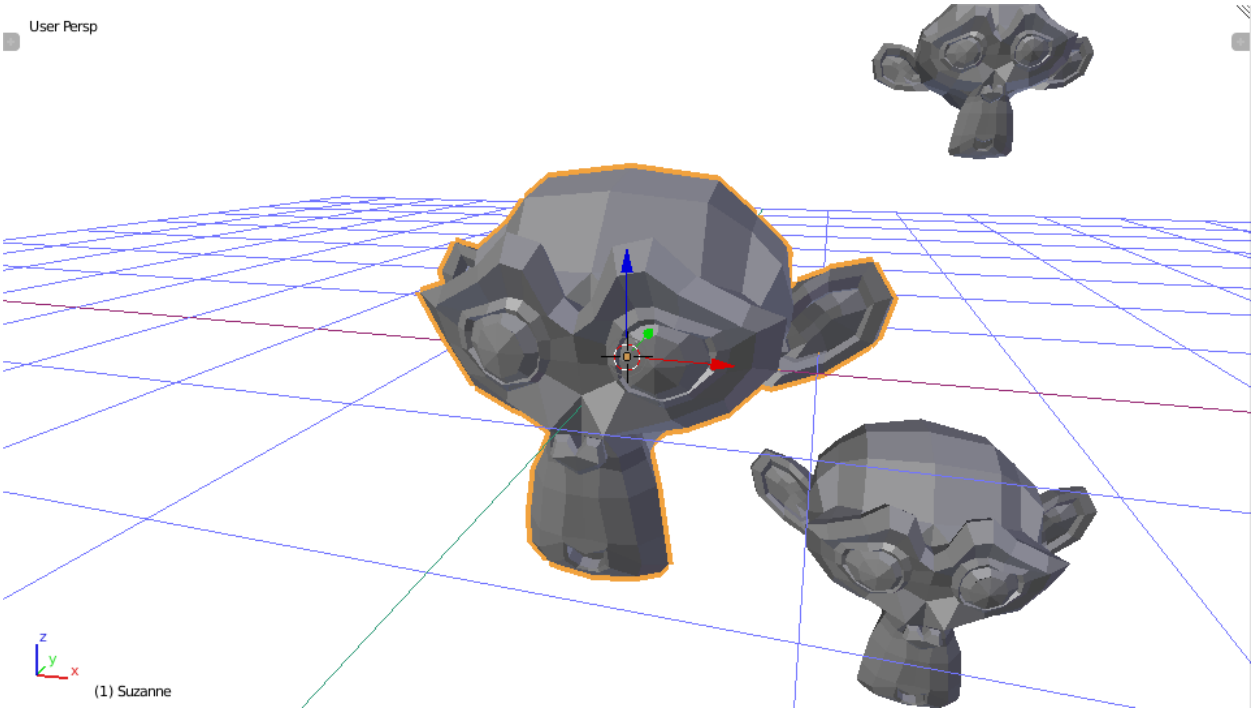

Blender User Preferences
Interface
Editing
Input
Add-ons
Themes
File
System
Presets:
Presets
Mouse:
Emulate 3 Button Mouse
Continuous Grab
Drag Threshold: 5 px
Tweak Threshold: 10 px
Select With:
Left
Right
Double Click:
Speed: 350
Emulate Numpad
Orbit Style:
Turntable
Trackball
Zoom Style:
Dolly
Vertical
Horizontal
Blender
Name
Window
Screen
View2D
View2D Buttons List
Header
Grease Pencil
3D View
Frames
Markers
Animation
Animation Channels
Graph Editor
Dopesheet
NLA Editor
Image
Timeline
Outliner
Save User Settings
Import Key Configuration...
Export Key Configuration...

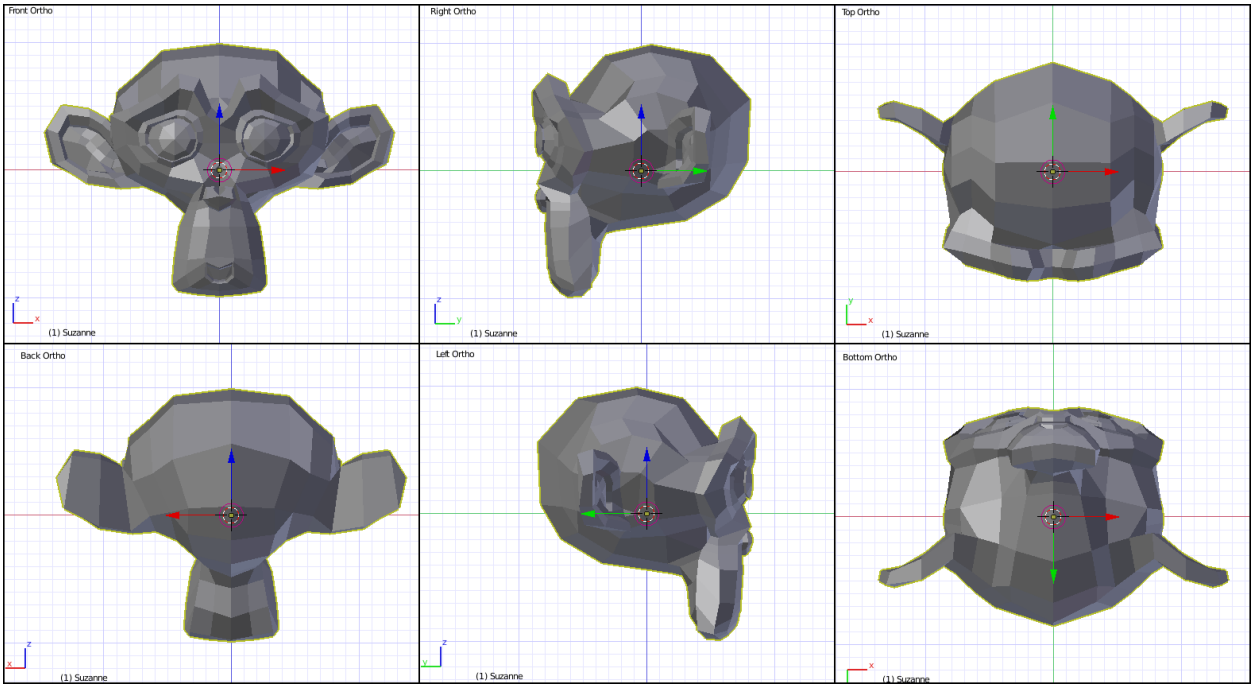

Continuous Grab
Drag Threshold: 5 px
Tweak Thres 10 px
Select With:
Left
Right
Double Click:
Speed: 350
Emulate Numpad
Orbit Style:
Turntable
Trackball
Zoom Style:
Dolly
Vertical
Horizontal
Save User Settings
Import Key Configurat
Header
3D View
Frames
Markers
Image
Timeline
Outliner

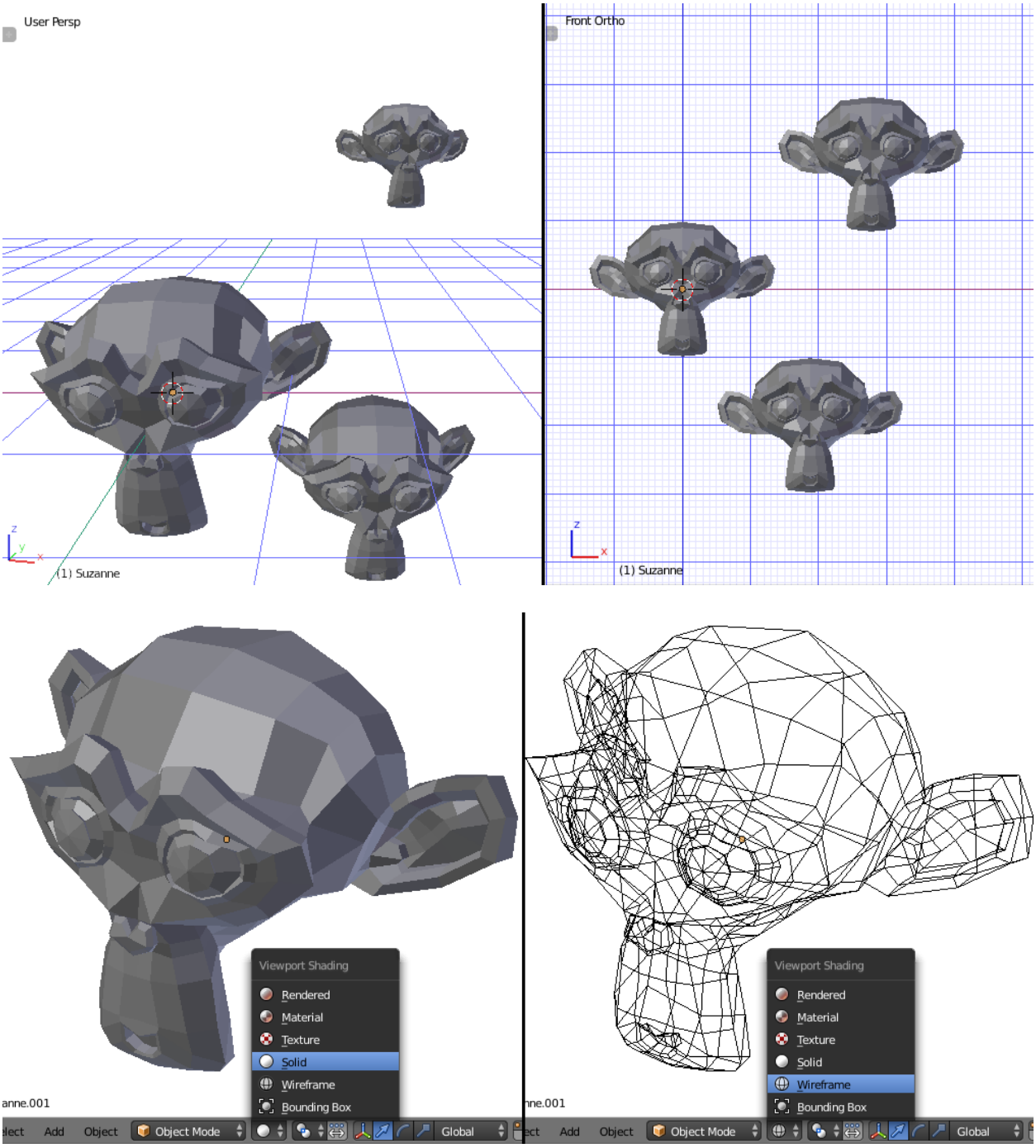

Mouse:
Emulate 3 Button Mouse
Continuous Grab
Drag Threshold: 5 px
Tweak Threshold: 10 px
Select With:
Left
Right
Double Click:
Speed: 350
Emulate Numpad
Orbit Style:
Turntable
Trackball
Zoom Style:
Dolly
Vertical
Save User Settings

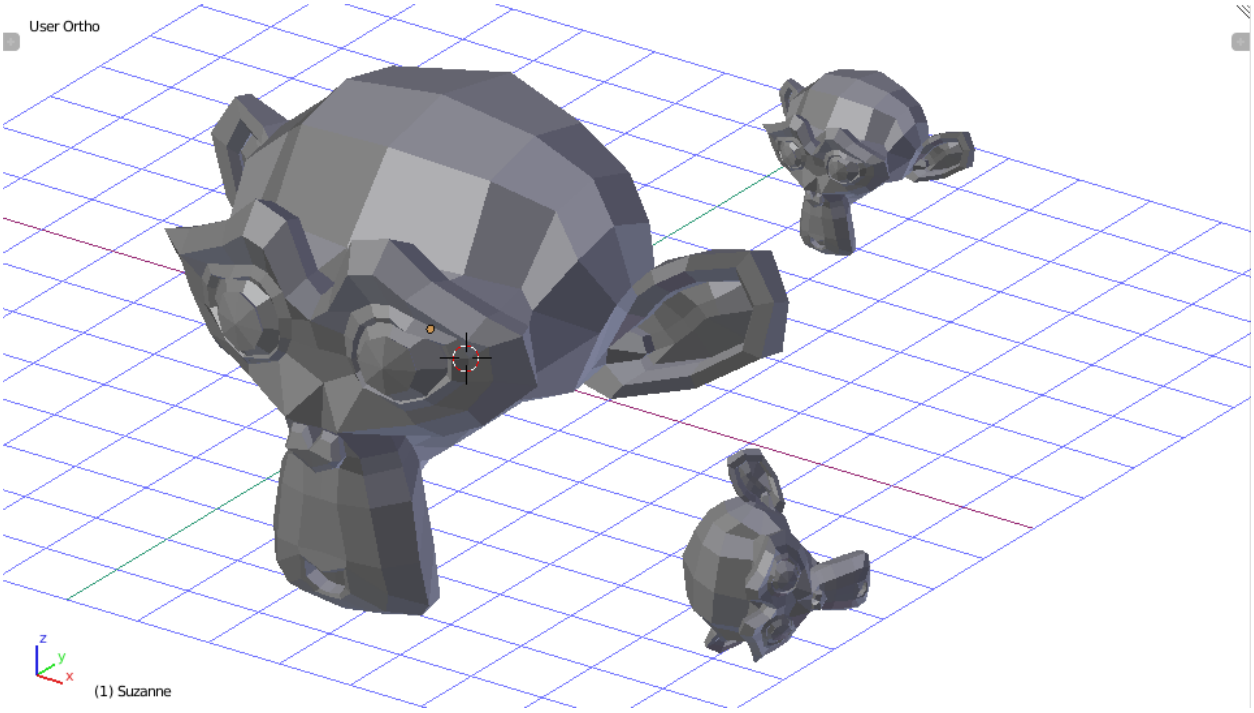

Add
Mesh
Curve
Surface
Metaball
Text
Armature
Lattice
Empty
Speaker
Camera
Lamp
Force Field
Group Instance
Plane
Cube
Circle
UV Sphere
Ico Sphere
Cylinder
Cone
Torus
Grid
Monkey
Construct a Suzanne mesh
Python: bpy.ops.mesh.primitive_monkey_add()



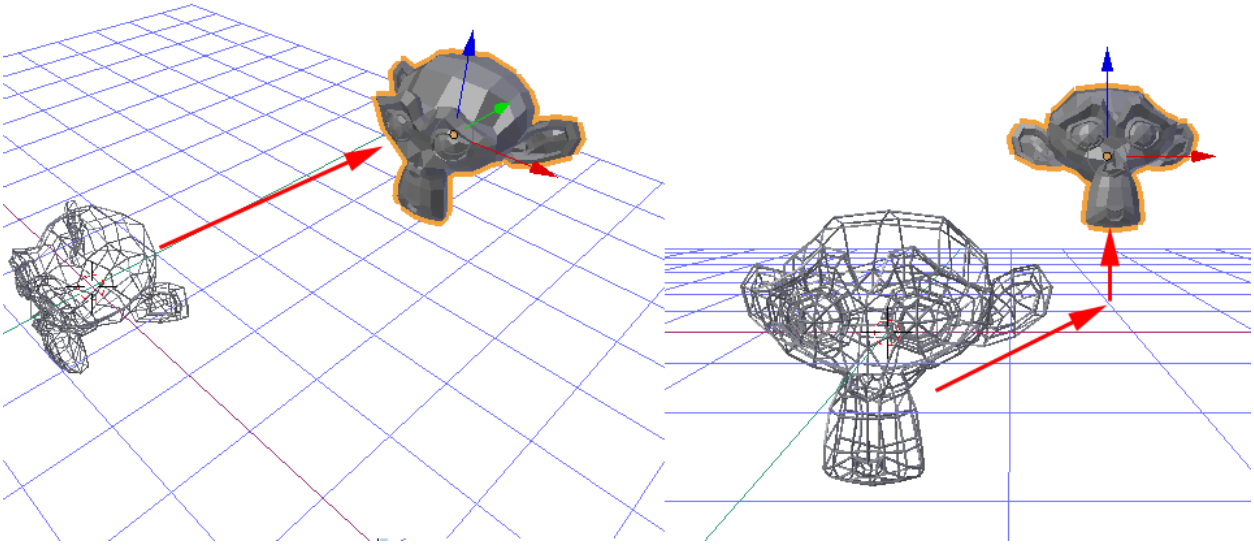

User Persp
(1) Suzanne

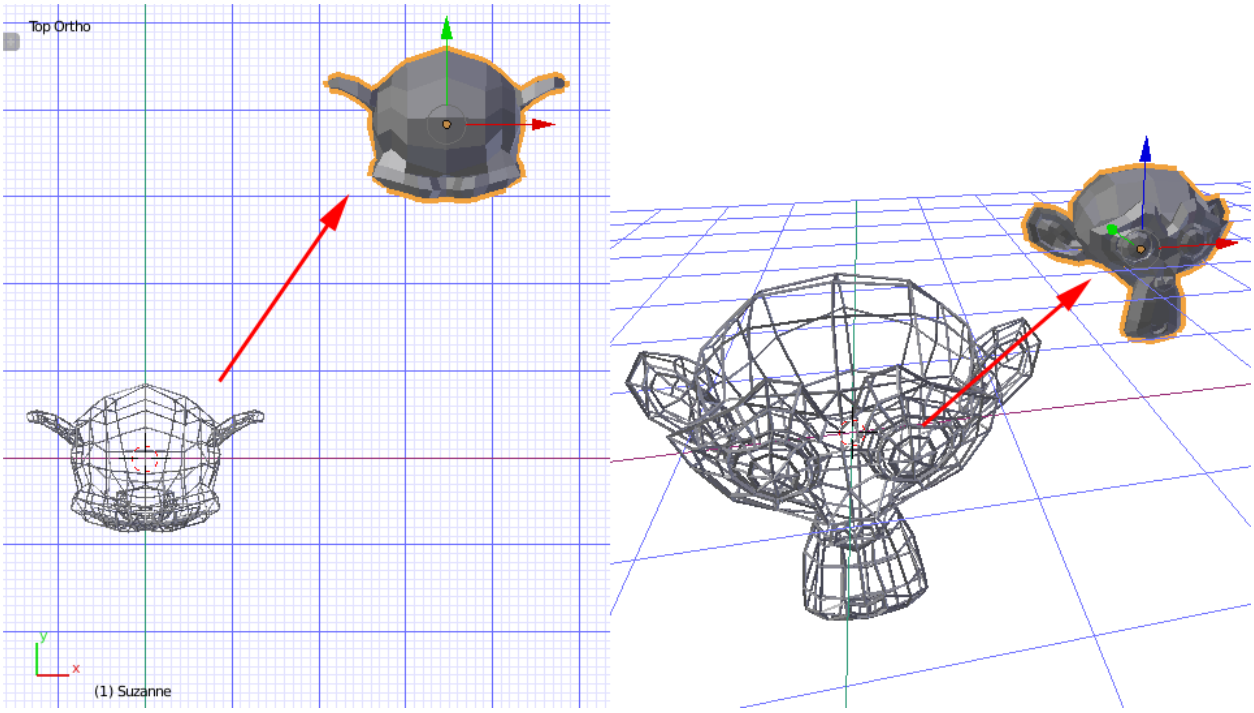

Front Ortho
(1) Suzanne
Right Ortho
(1) Suzanne
Top Ortho
(1) Suzanne
Back Ortho
(1) Suzanne
Left Ortho
(1) Suzanne
Bottom Ortho
(1) Suzanne


User Persp
(1) Suzanne
Front Ortho
(1) Suzanne
Viewport Shading
Rendered
Material
Texture
Solid
Wireframe
Bounding Box
Add
Object
Object Mode
Global
Viewport Shading
Rendered
Material
Texture
Solid
Wireframe
Bounding Box
Add
Object
Object Mode
Global

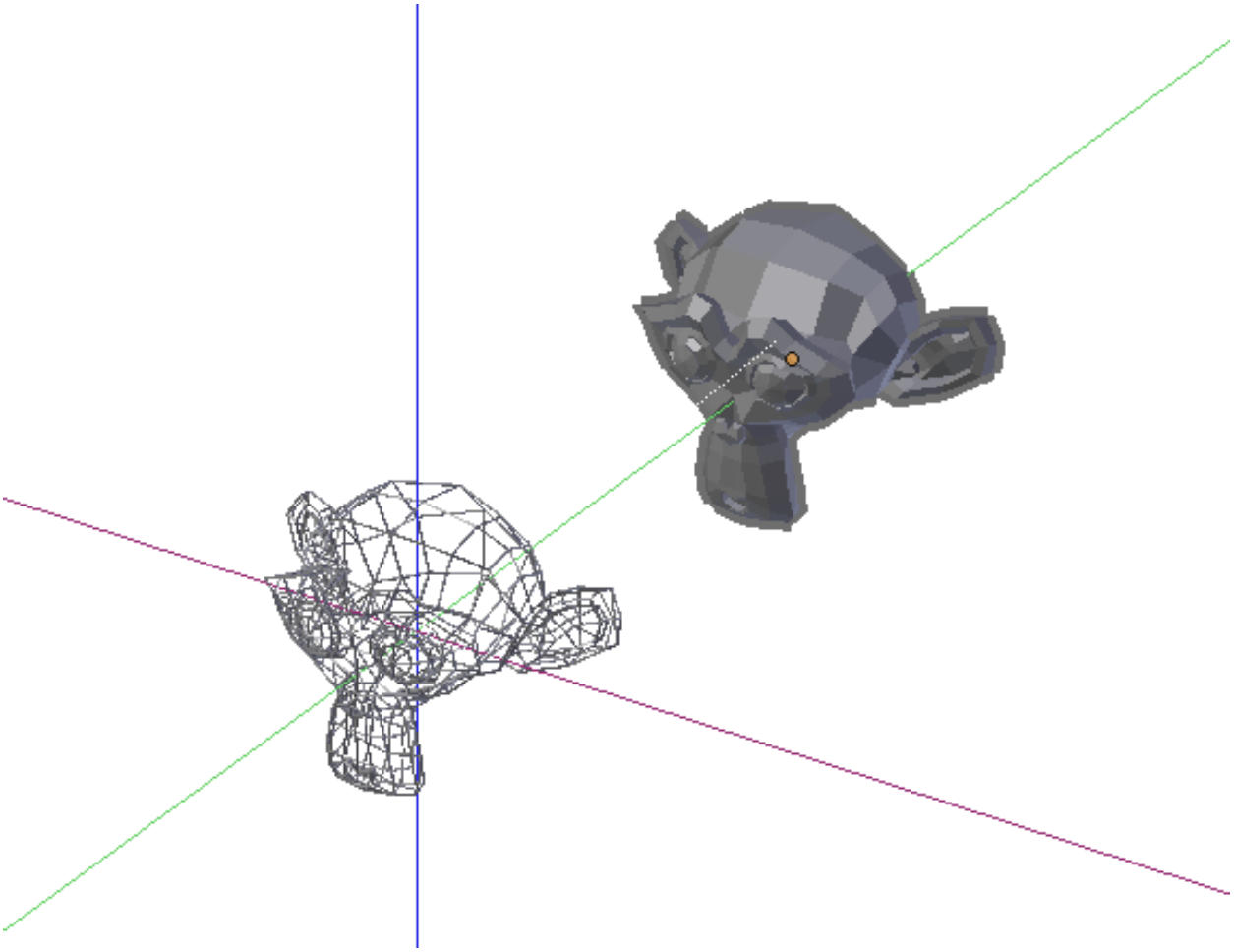


Without control

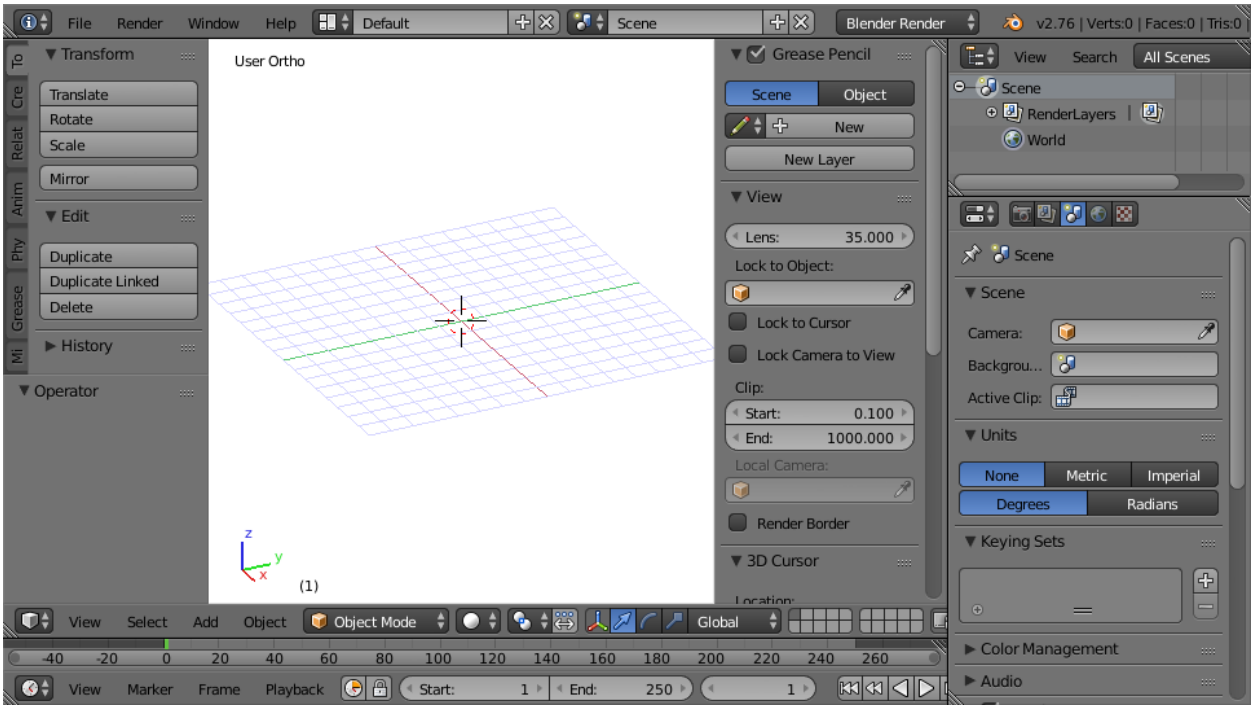


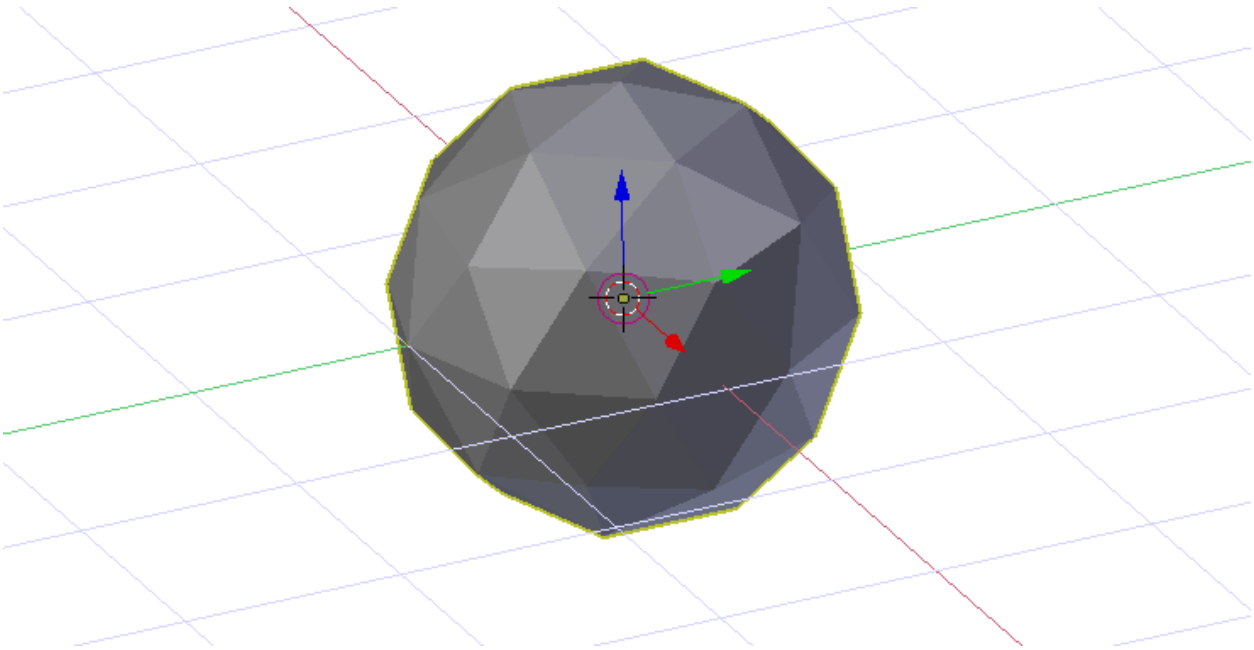

Top Ortho
(1) Suzanne

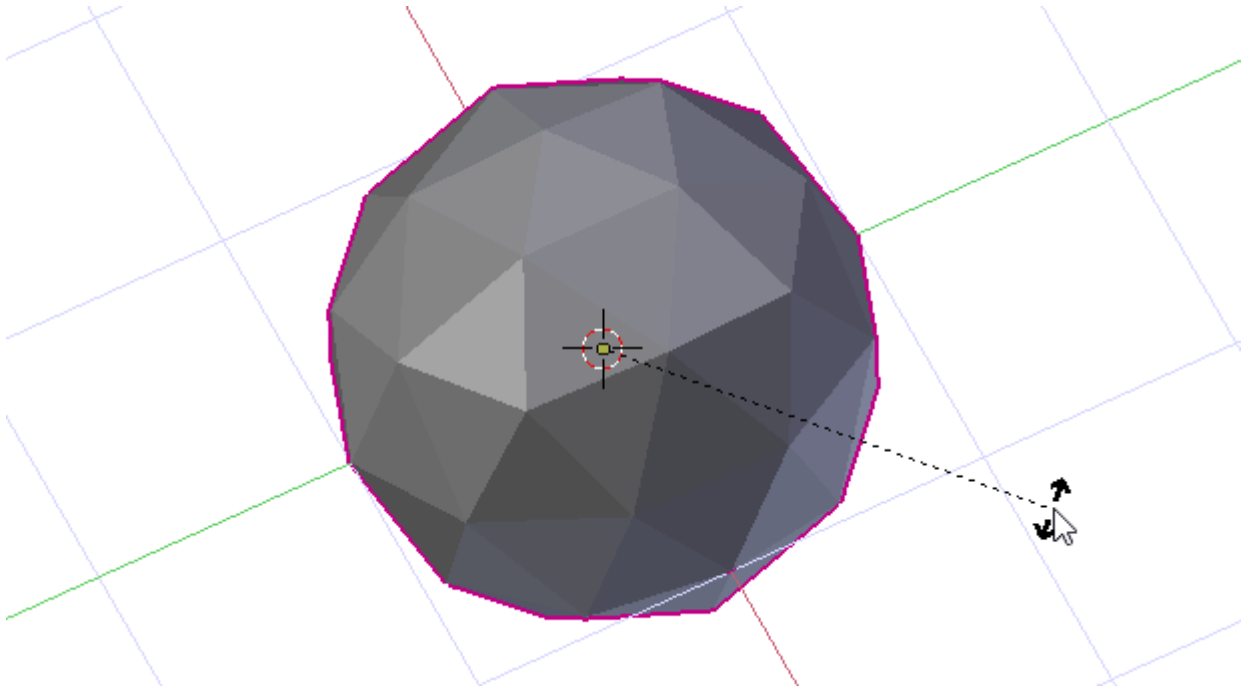
z
y
x

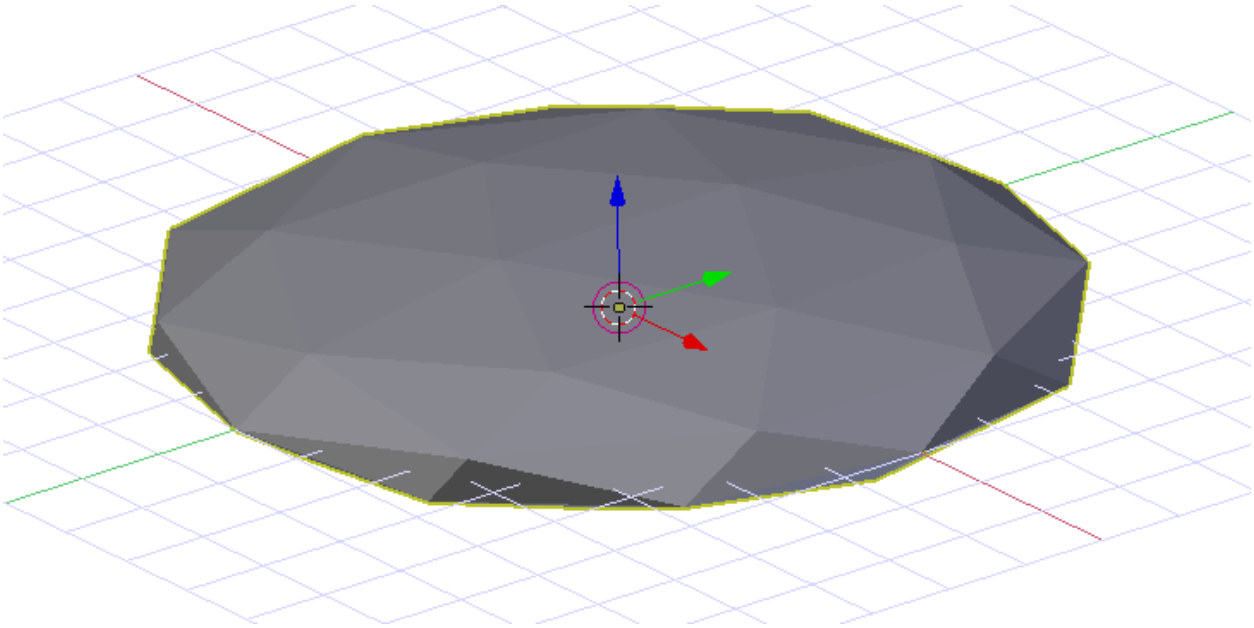


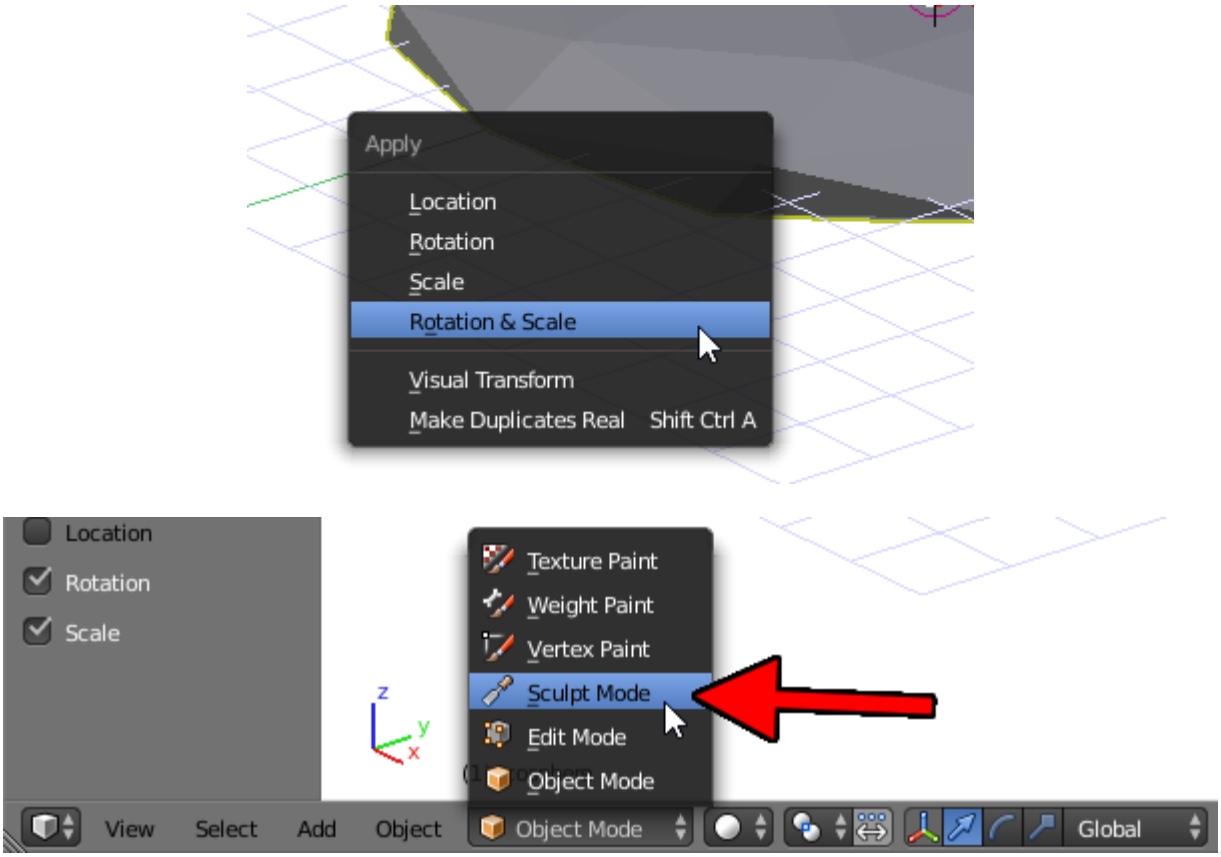
Chapter 3: Sculpting the Face of the Sun

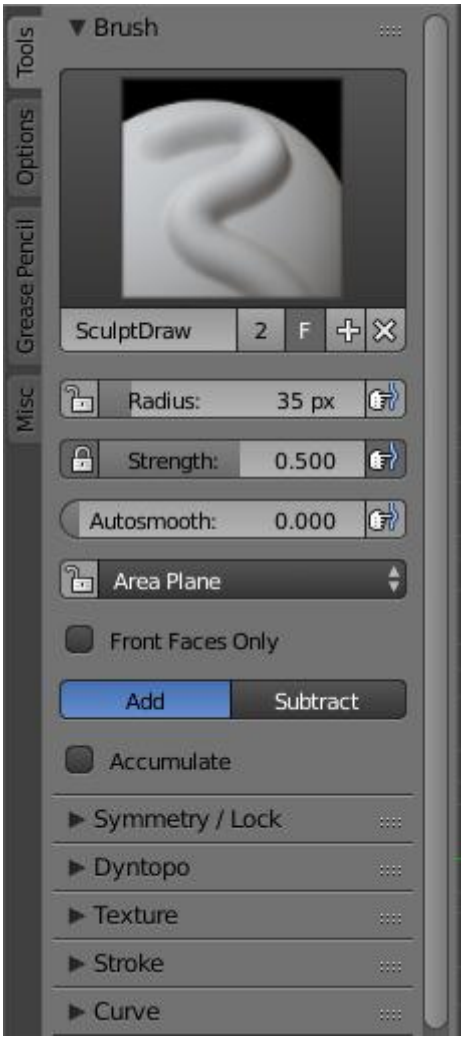


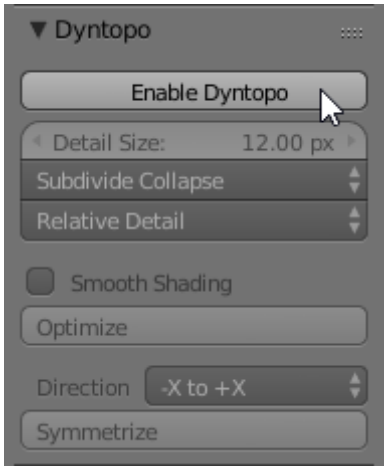


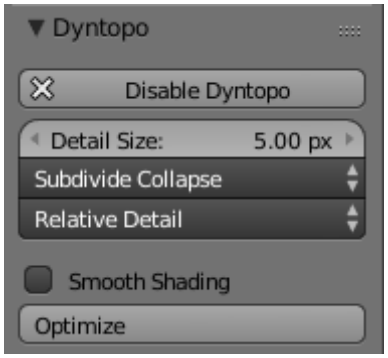


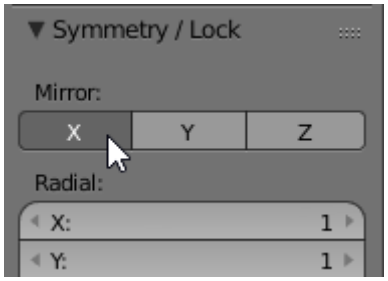


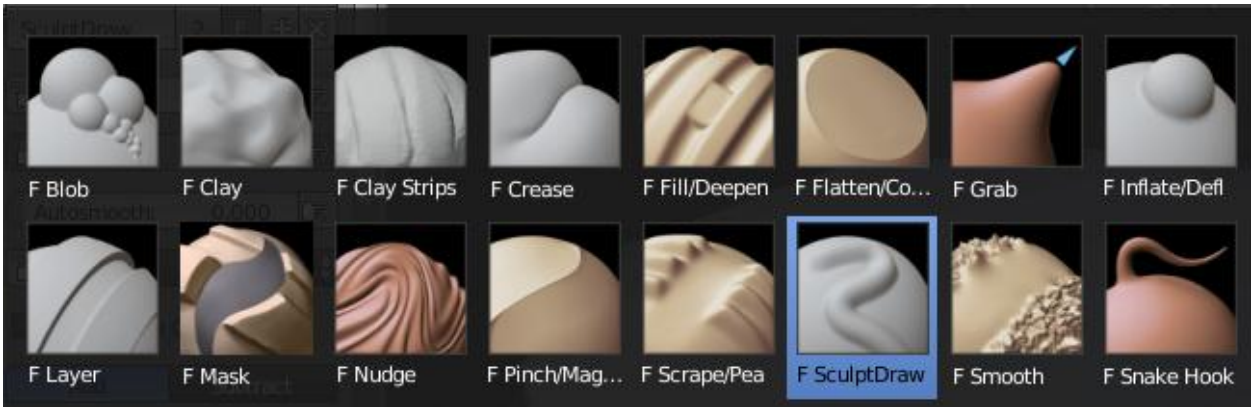

Apply
Location
Rotation
Scale
Rotation & Scale
Visual Transform
Make Duplicates Real Shift Ctrl A
Location
Rotation
Scale
Texture Paint
Weight Paint
Vertex Paint
Sculpt Mode
Edit Mode
Object Mode
z
y
x
View
Select
Add
Object
Object Mode
Global

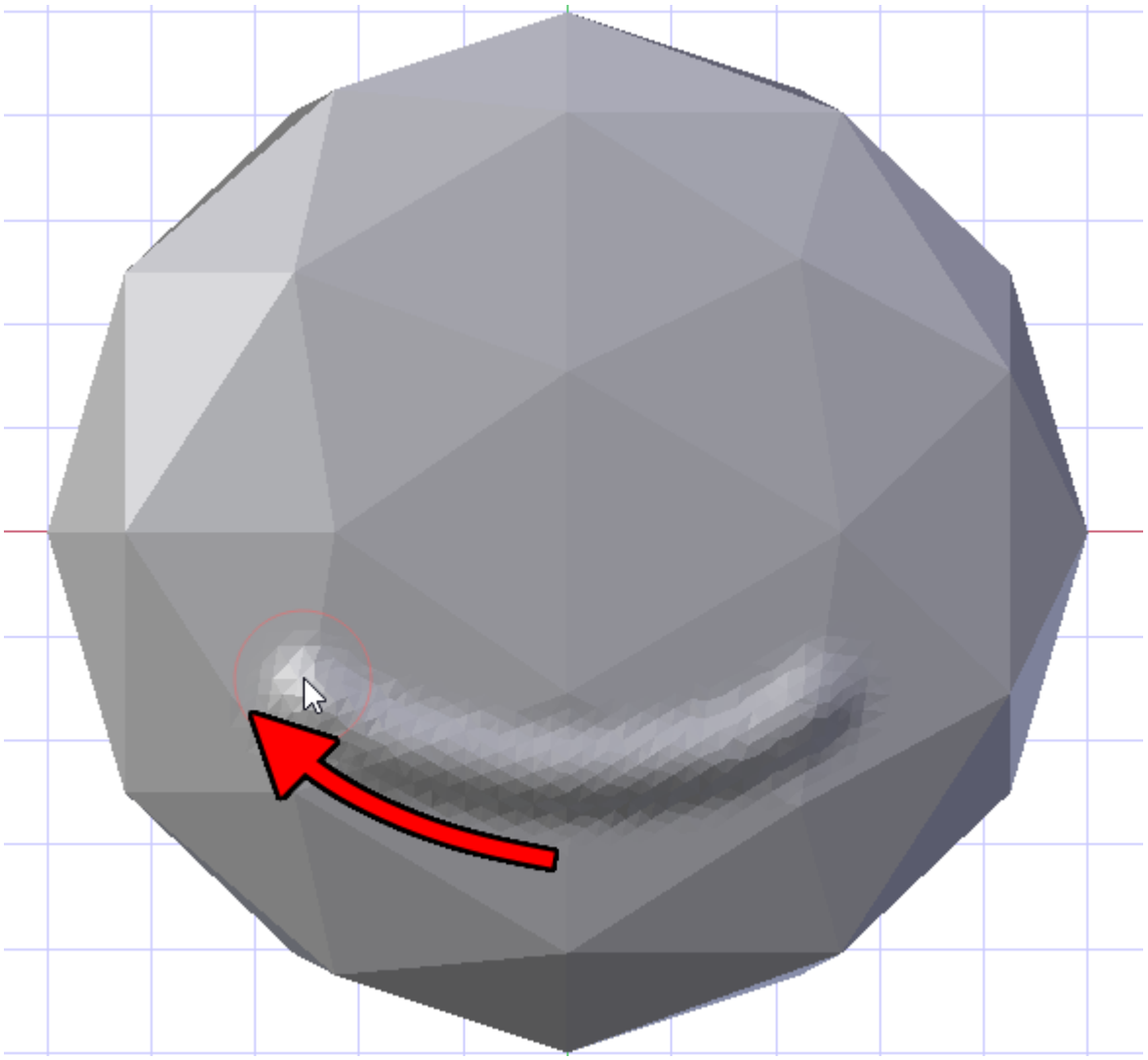

Tools
Options
Grease Pencil
Misc
▼ Brush
SculptDraw
2
F
Radius: 35 px
Strength: 0.500
Autosmooth: 0.000
Area Plane
Front Faces Only
Add
Subtract
Accumulate
▶ Symmetry / Lock
▶ Dyntopo
▶ Texture
▶ Stroke
▶ Curve

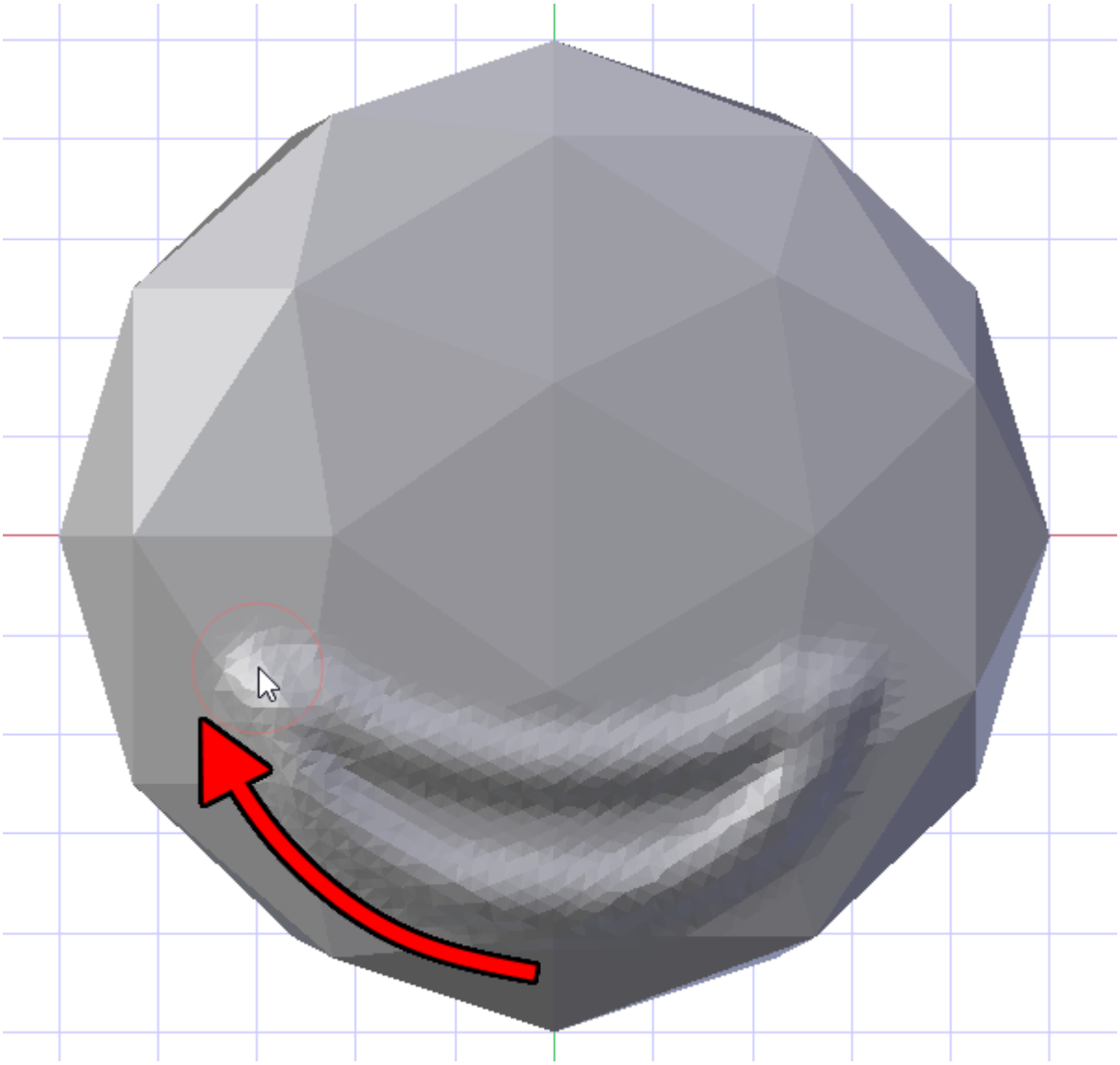

▼ Dyntopo
Enable Dyntopo
Detail Size: 12.00 px
Subdivide Collapse
Relative Detail
Smooth Shading
Optimize
Direction -X to +X
Symmetrize


Dyntopo
Disable Dyntopo
Detail Size: 5.00 px
Subdivide Collapse
Relative Detail
Smooth Shading
Optimize

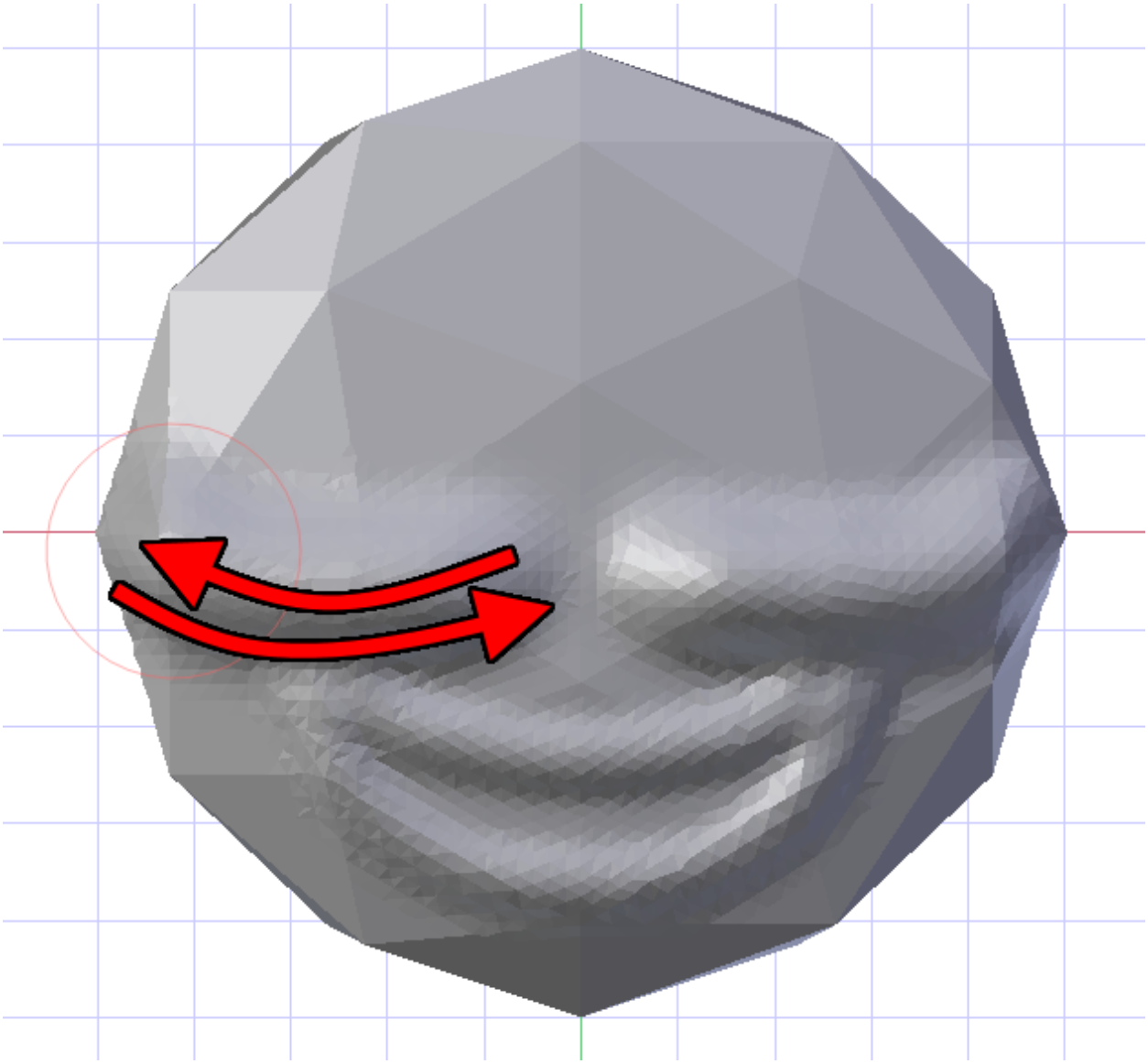

Symmetry / Lock
Mirror:
X
Y
Z
Radial:
X: 1
Y: 1

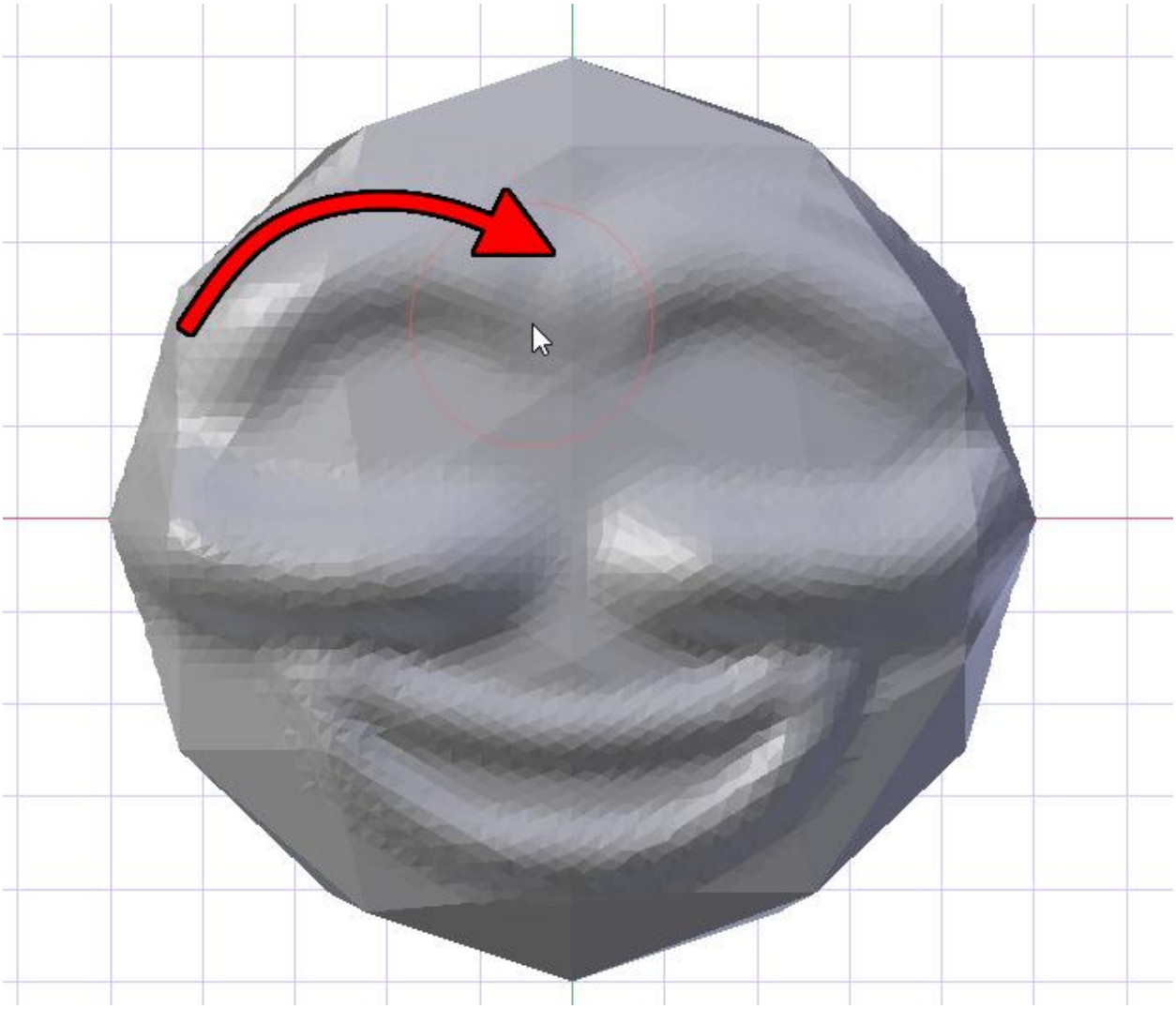

F Blob
F Clay
F Clay Strips
F Crease
F Fill/Deepen
F Flatten/Co...
F Grab
F Inflate/Defl
F Layer
F Mask
F Nudge
F Pinch/Mag...
F Scrape/Pea
F SculptDraw
F Smooth
F Snake Hook

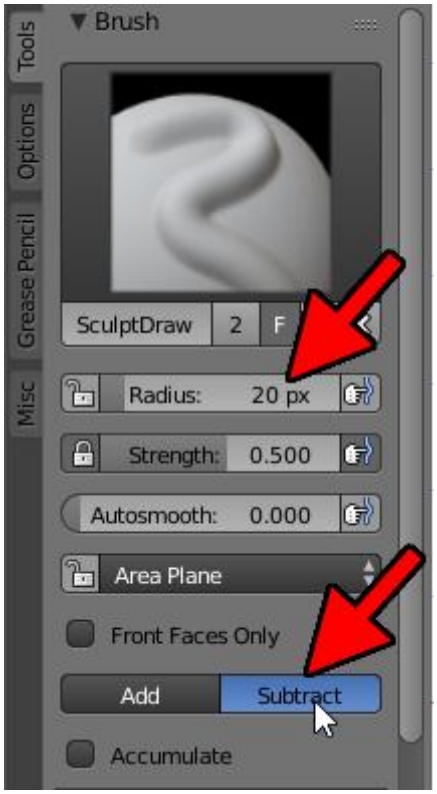


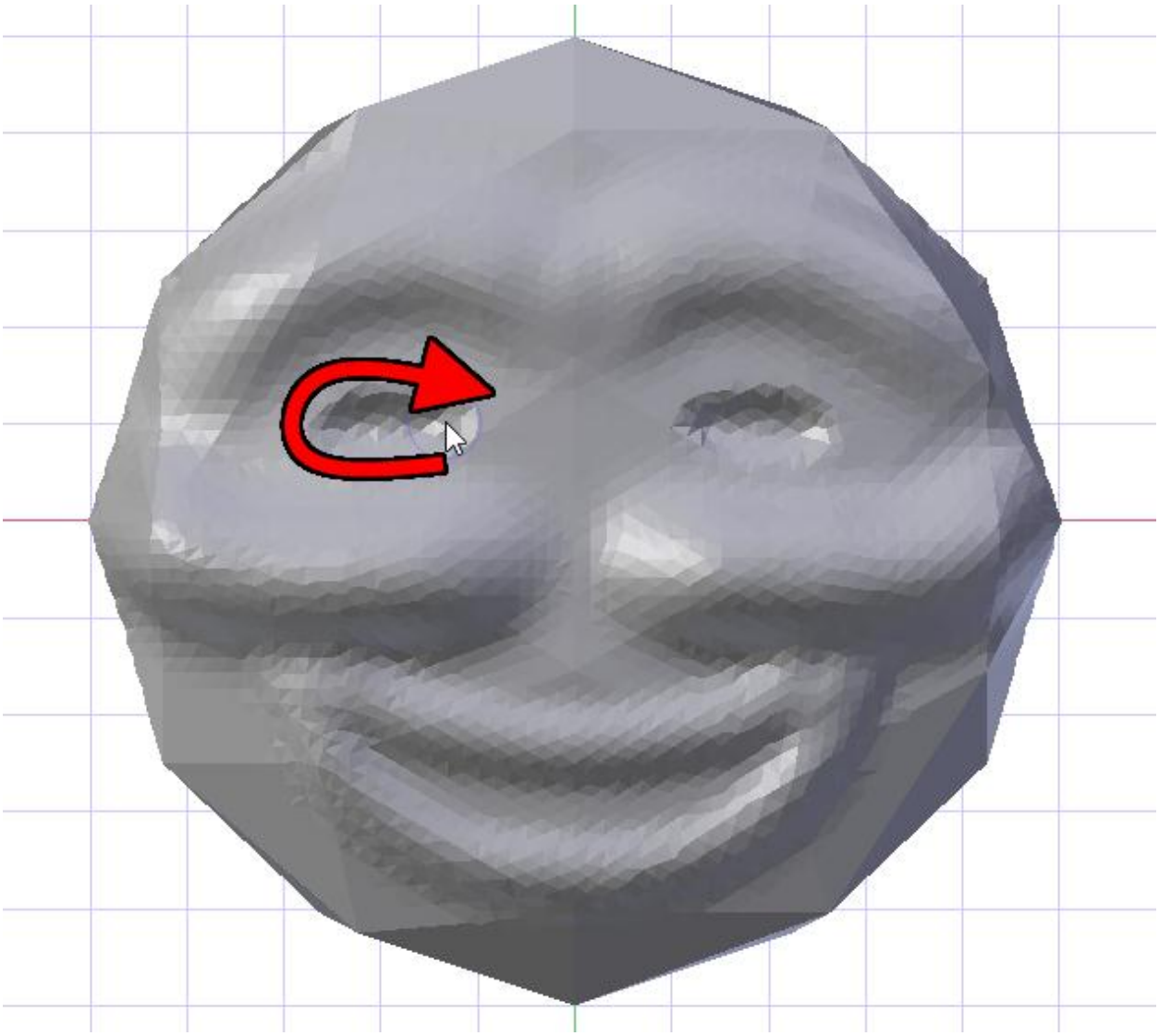


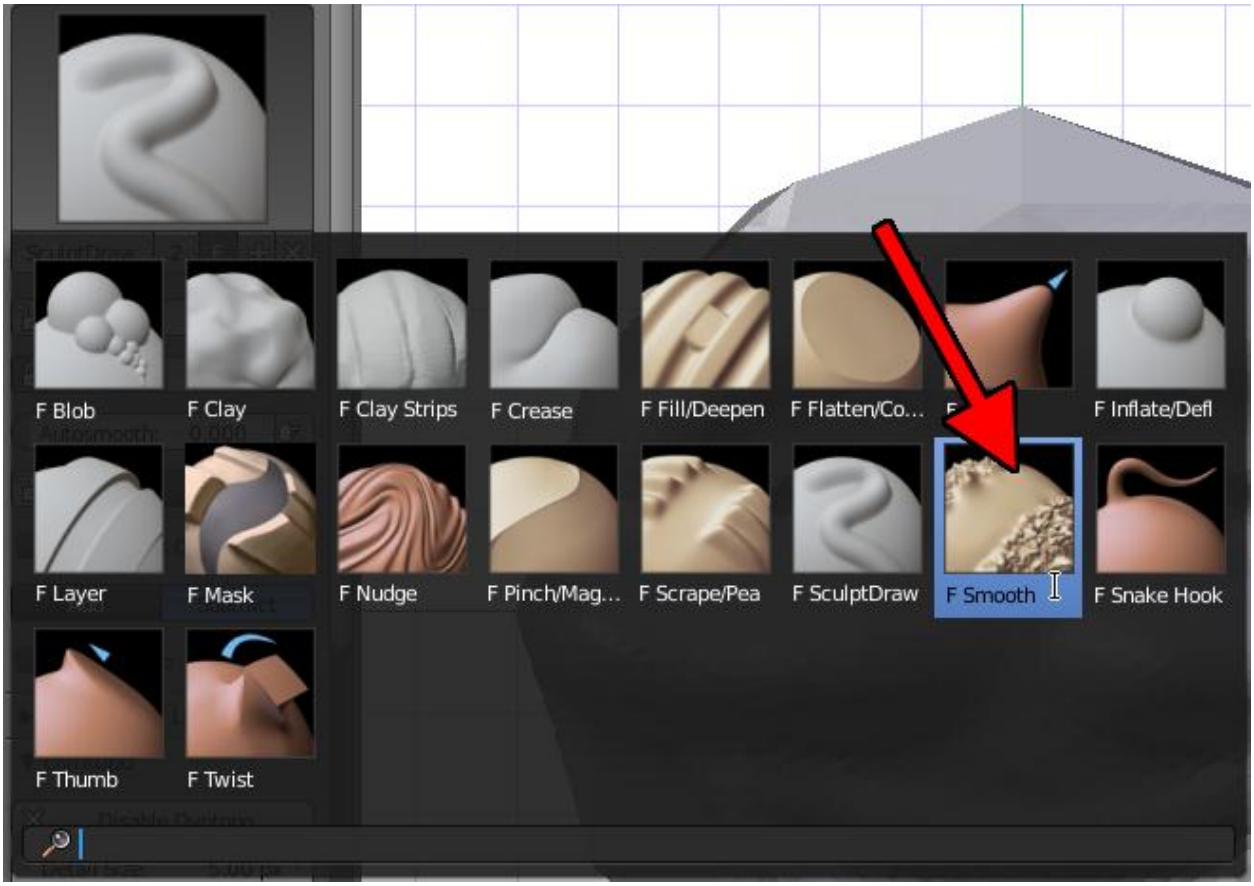
Brush
SculptDraw
2
F
Radius:
70 px
Strength:
0.500

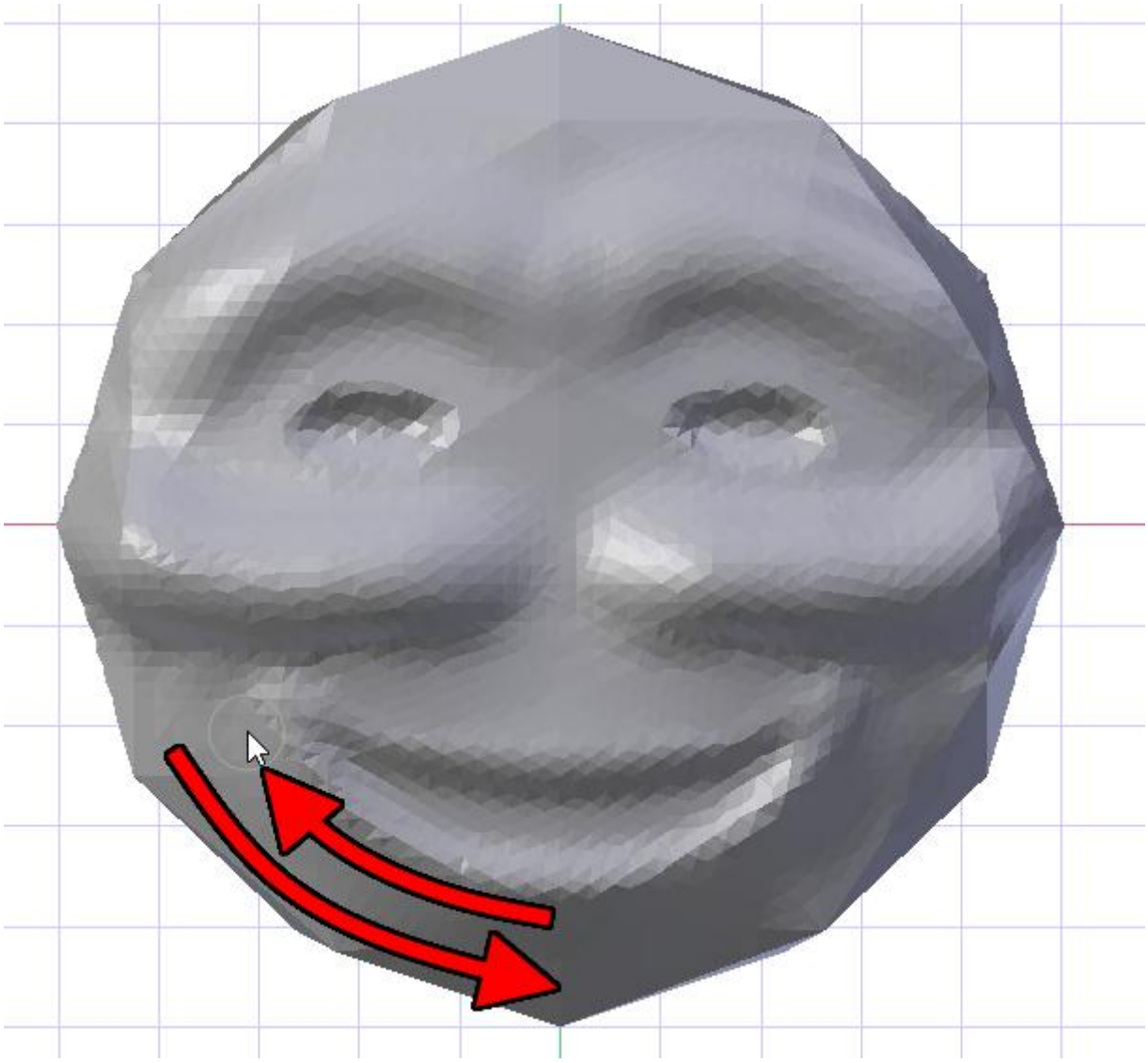


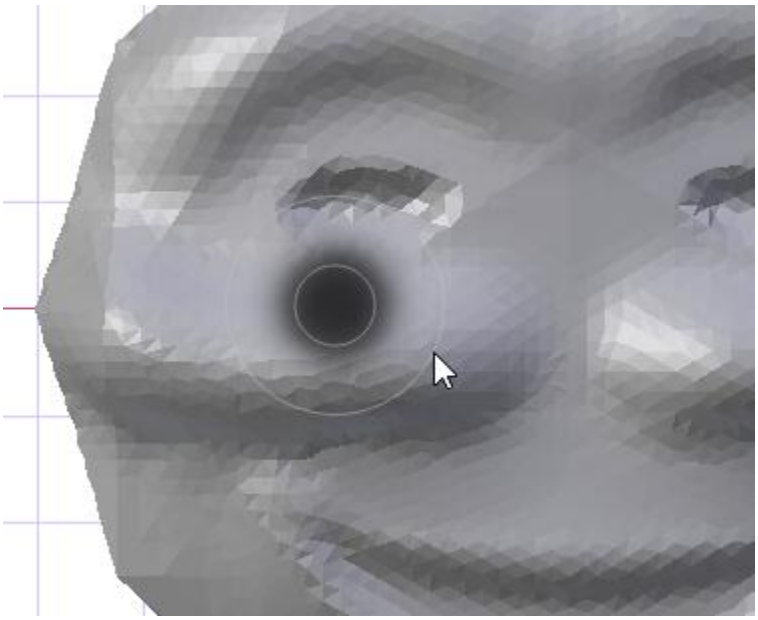


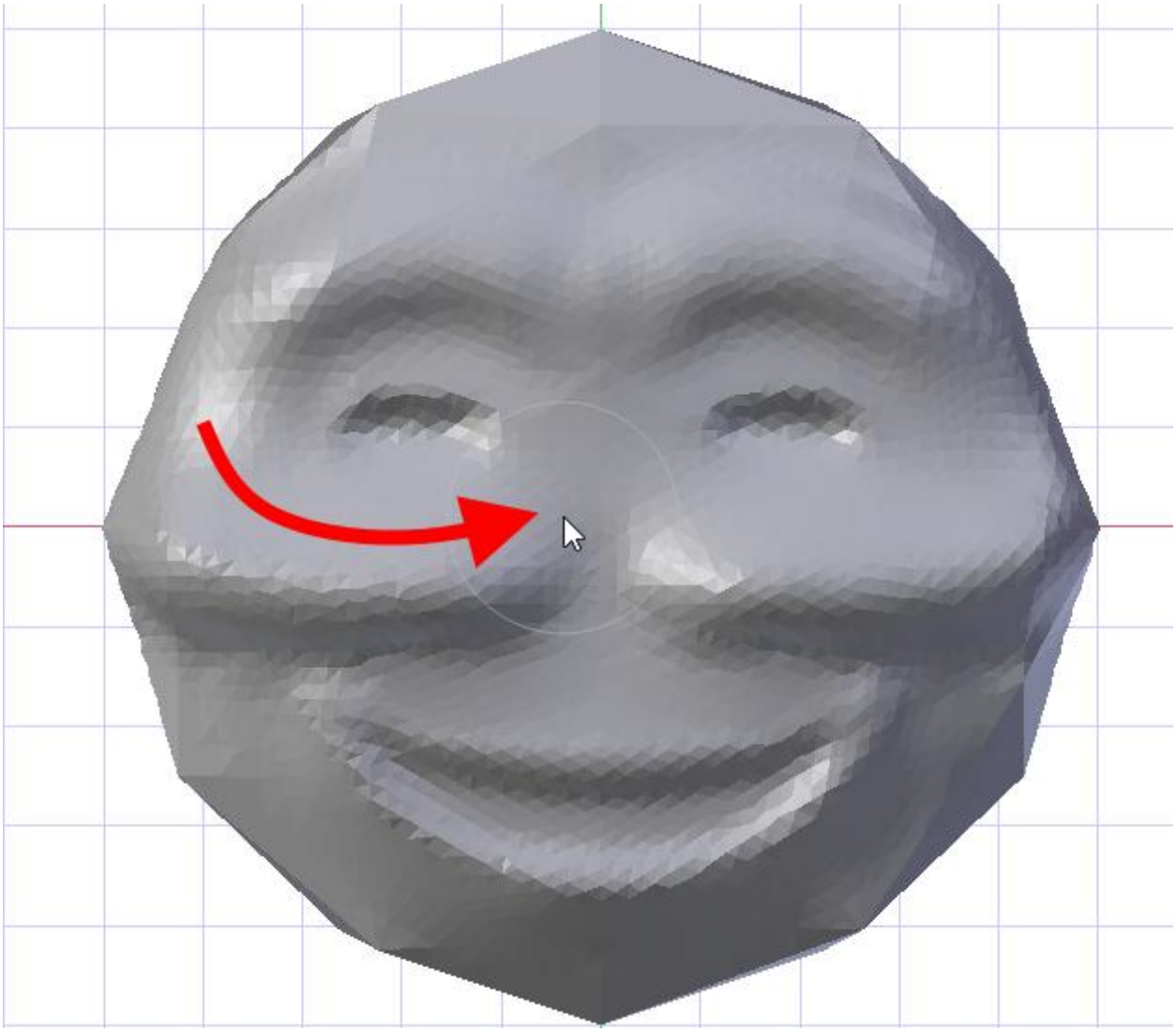

Brush
Tools
Options
Grease Pencil
Misc
SculptDraw
2
F
Radius: 20 px
Strength: 0.500
Autosmooth: 0.000
Area Plane
Front Faces Only
Add
Subtract
Accumulate

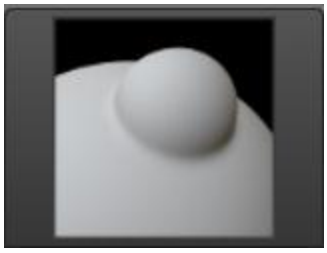


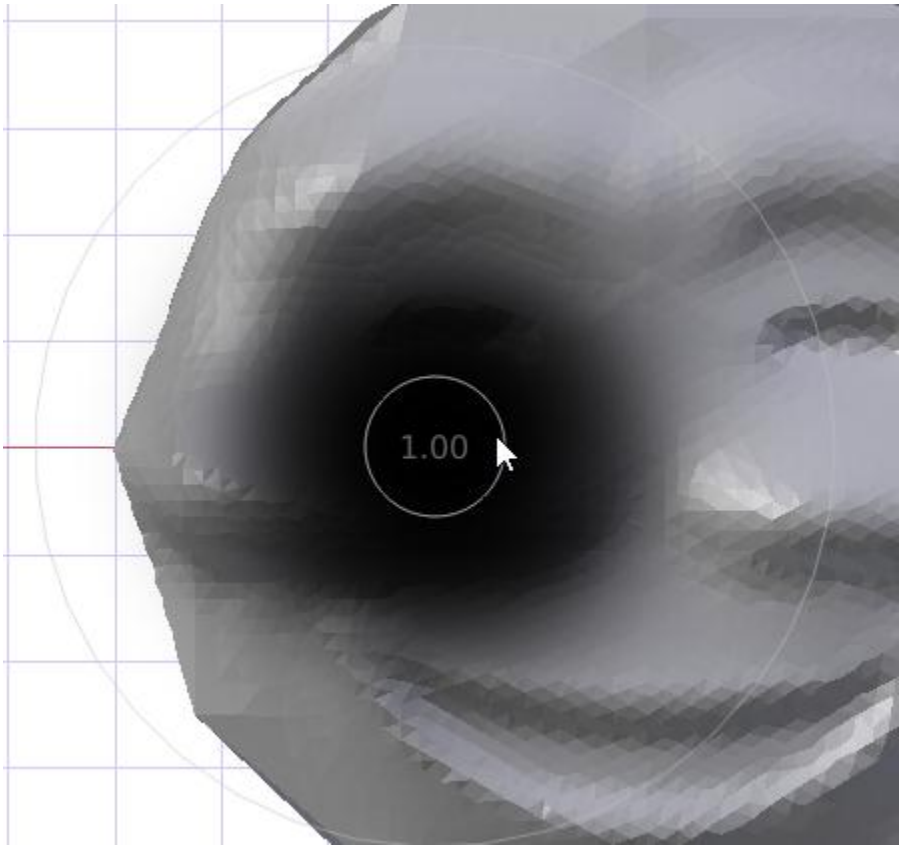

F Blob
F Clay
F Clay Strips
F Crease
F Fill/Deepen
F Flatten/Co...
F Inflate/Defl
F Layer
F Mask
F Nudge
F Pinch/Mag...
F Scrape/Pea
F SculptDraw
F Smooth
F Snake Hook
F Thumb
F Twist

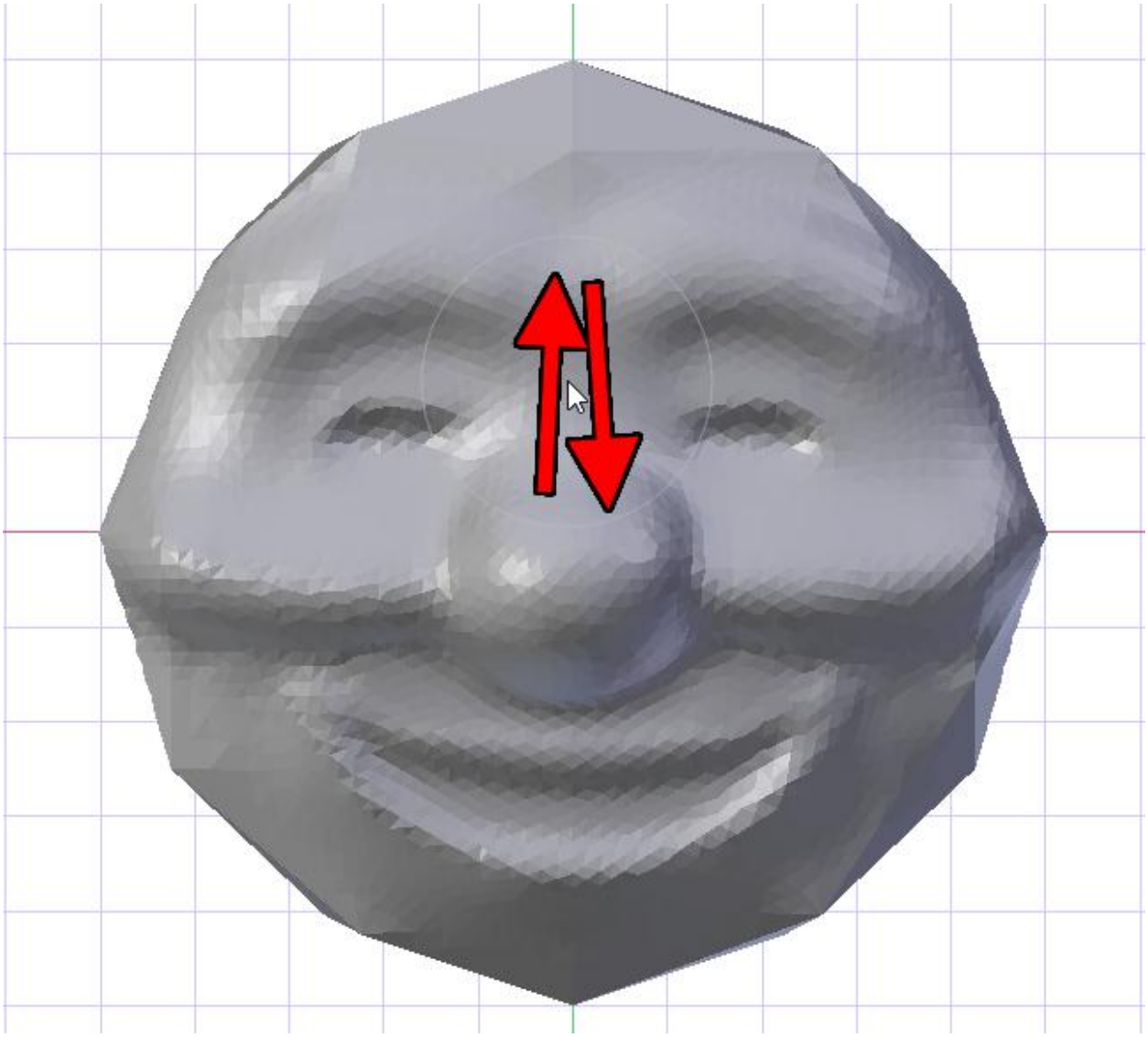


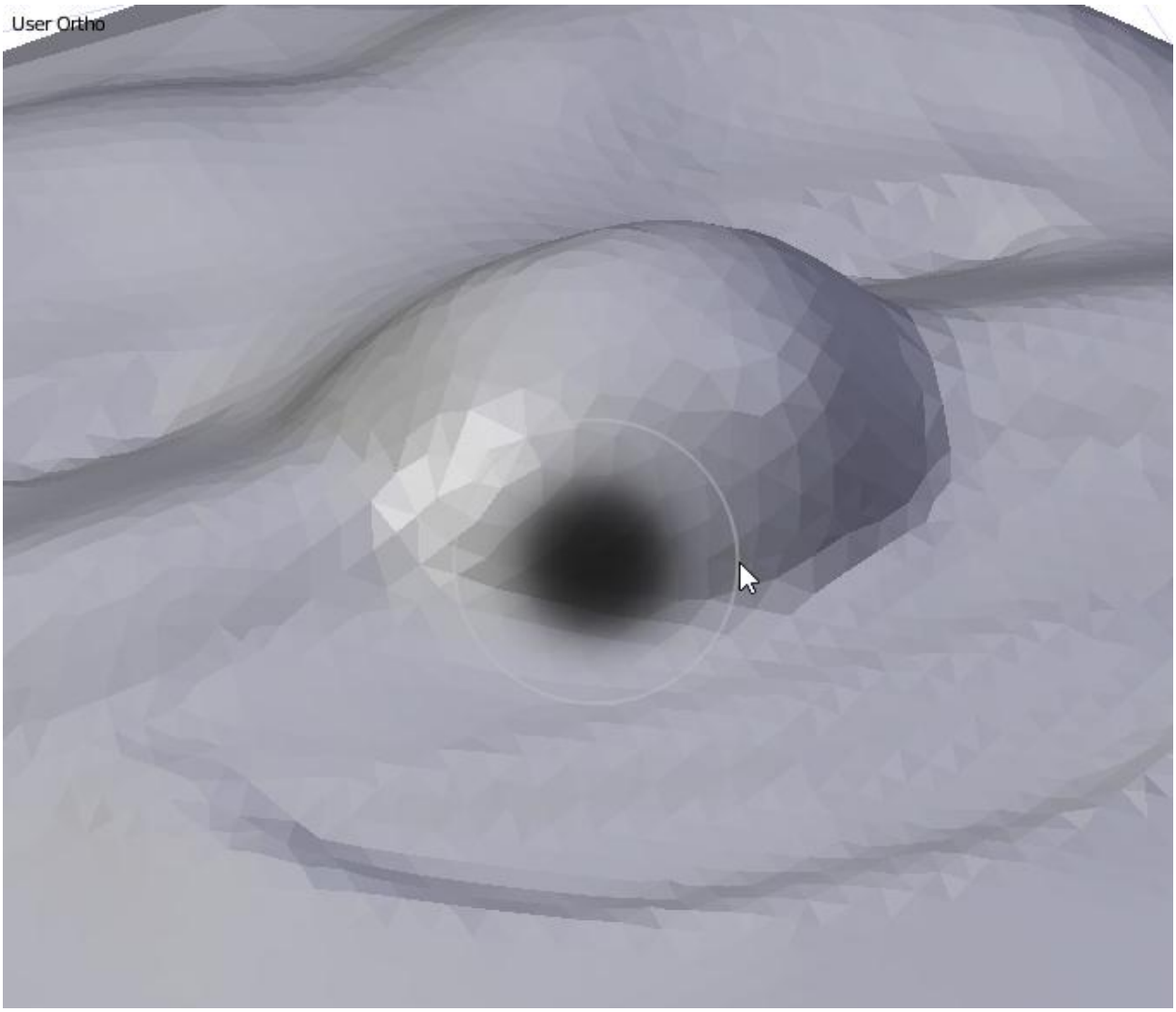


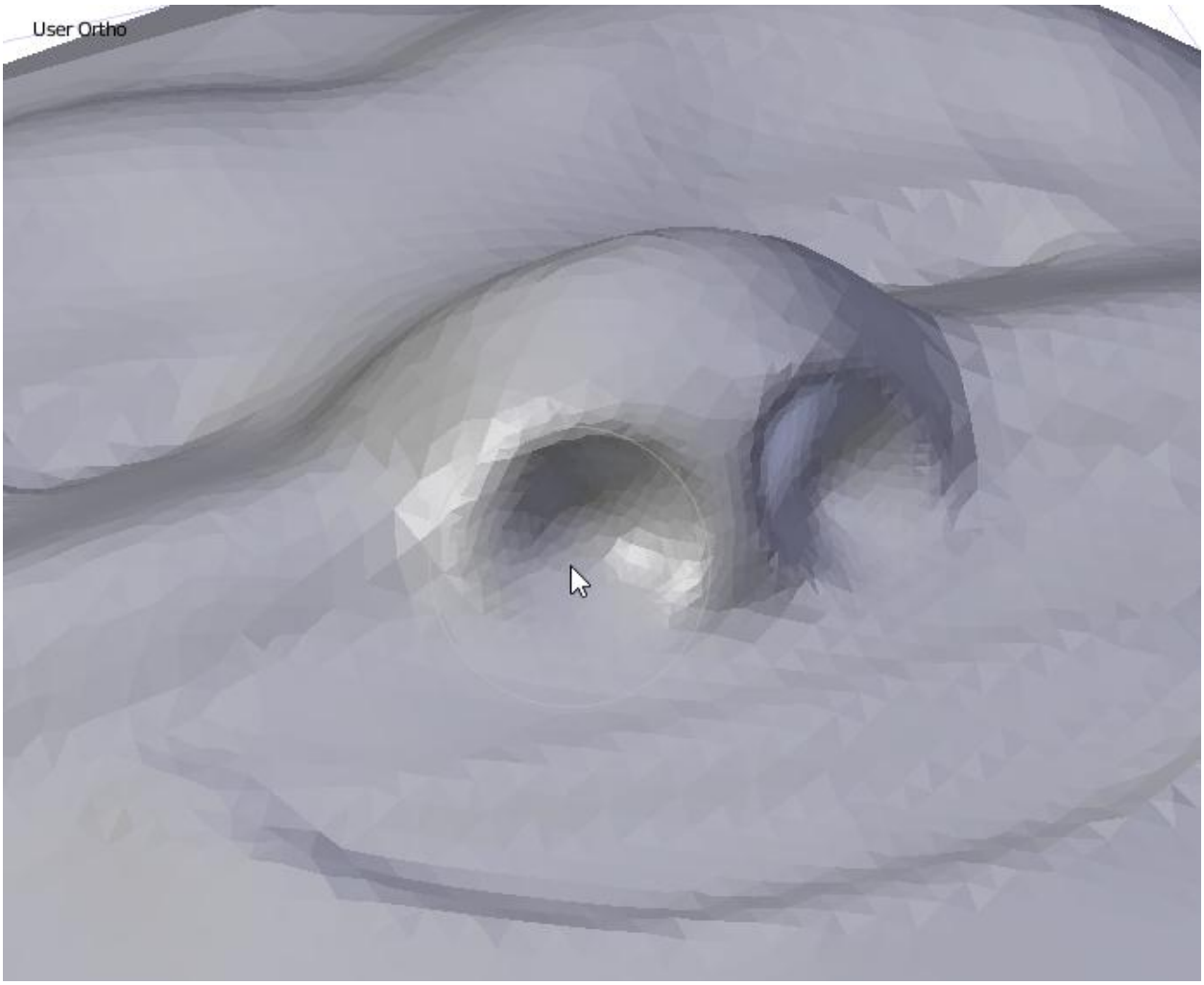


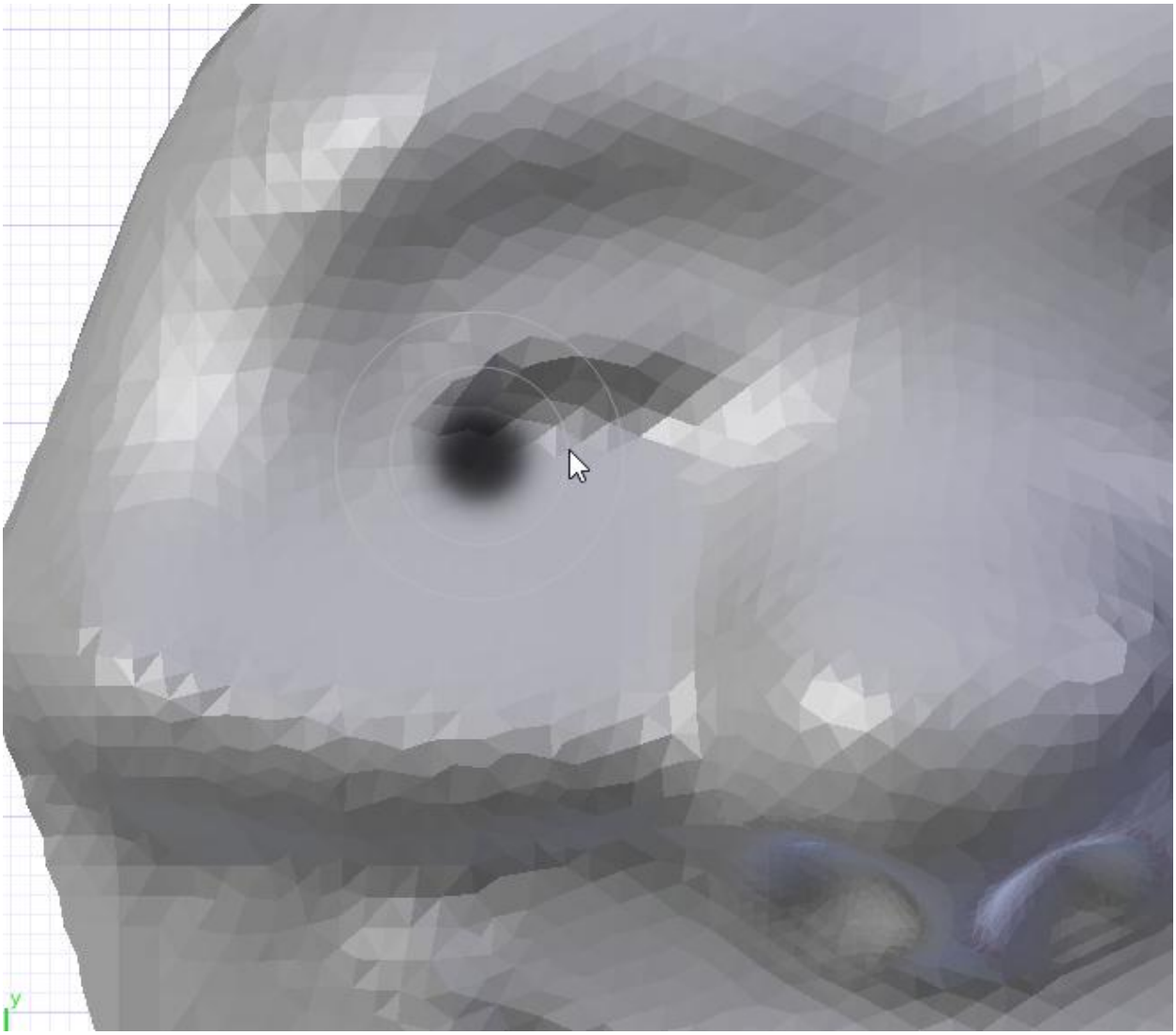


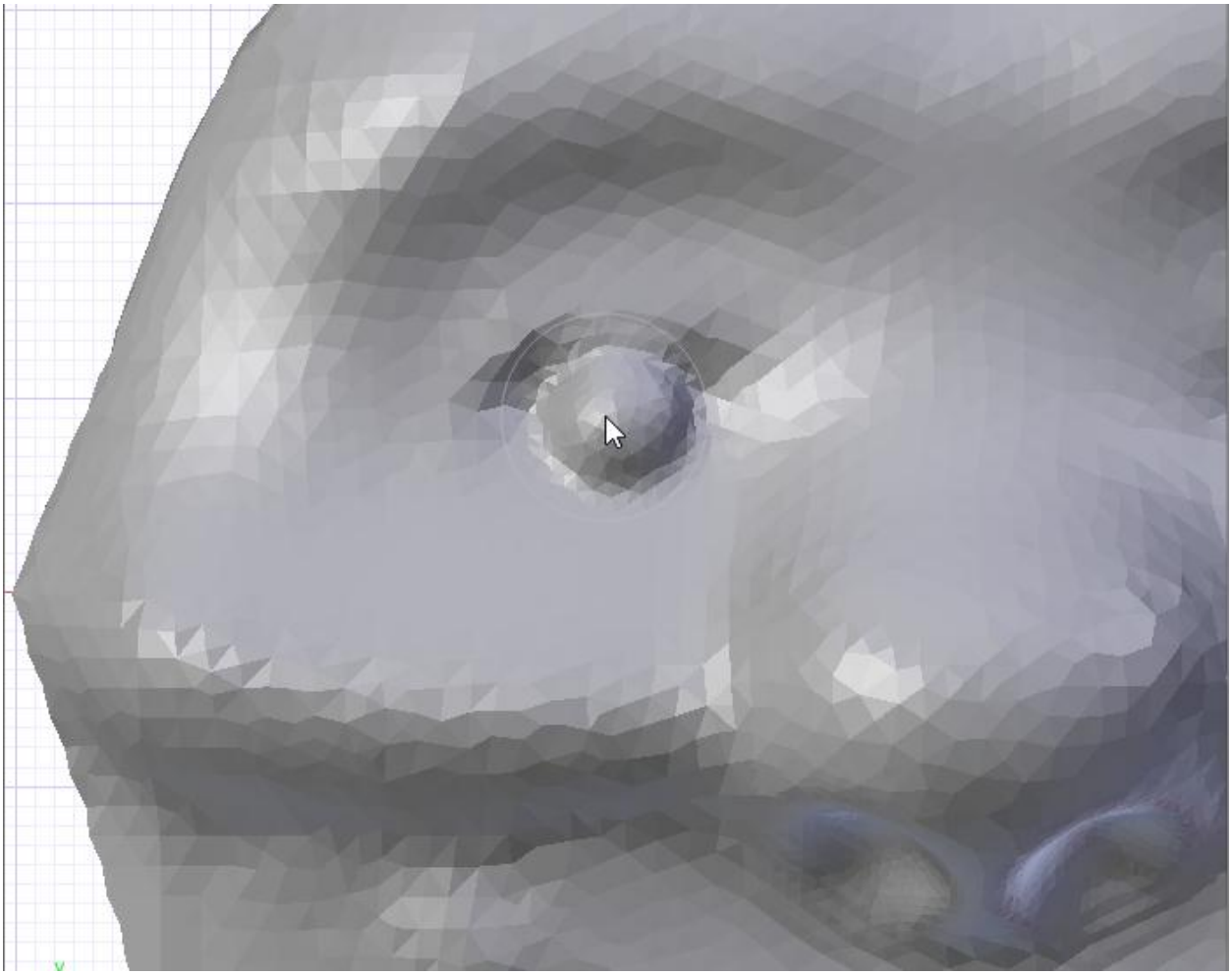

1.00



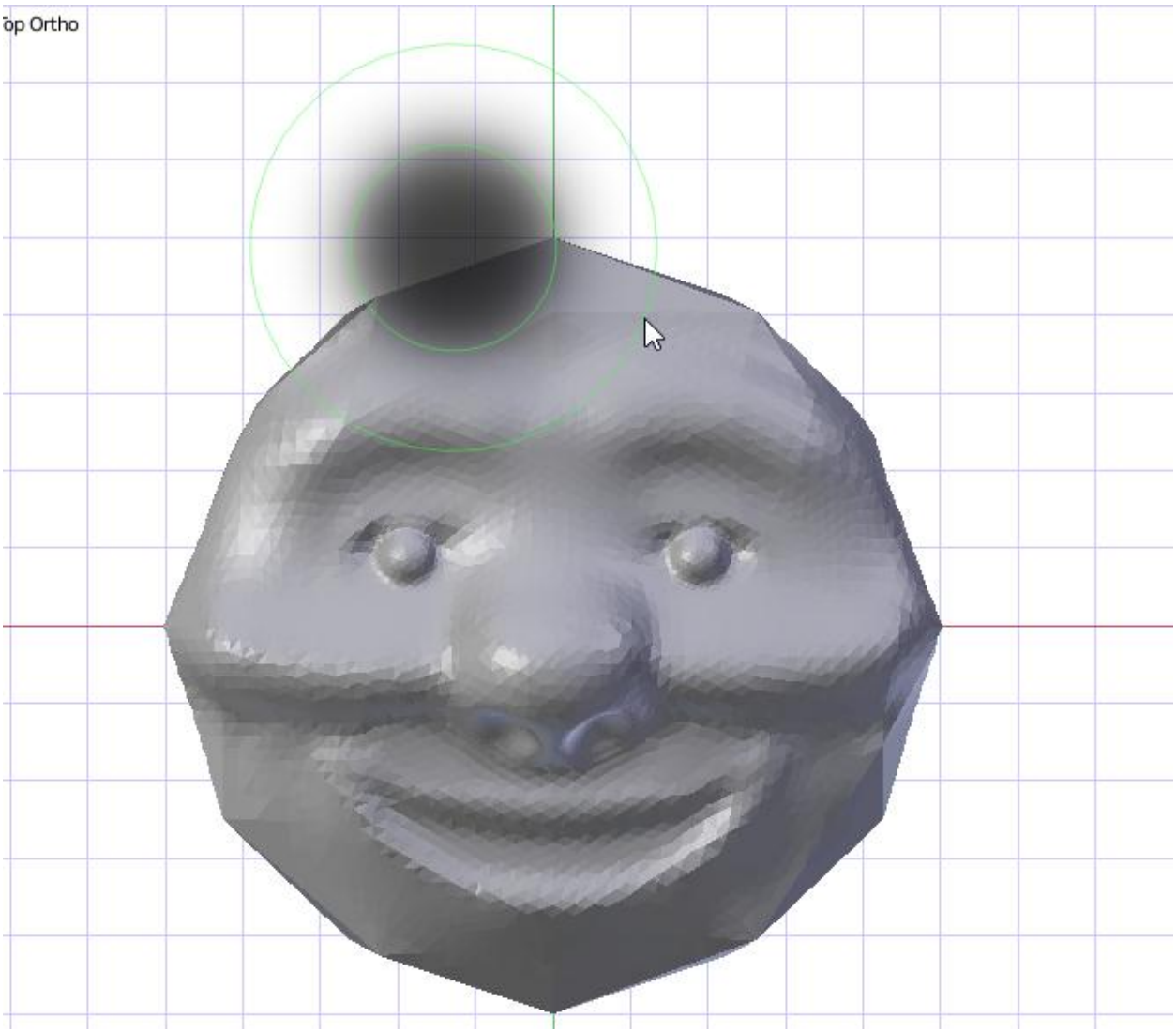

User Ortho

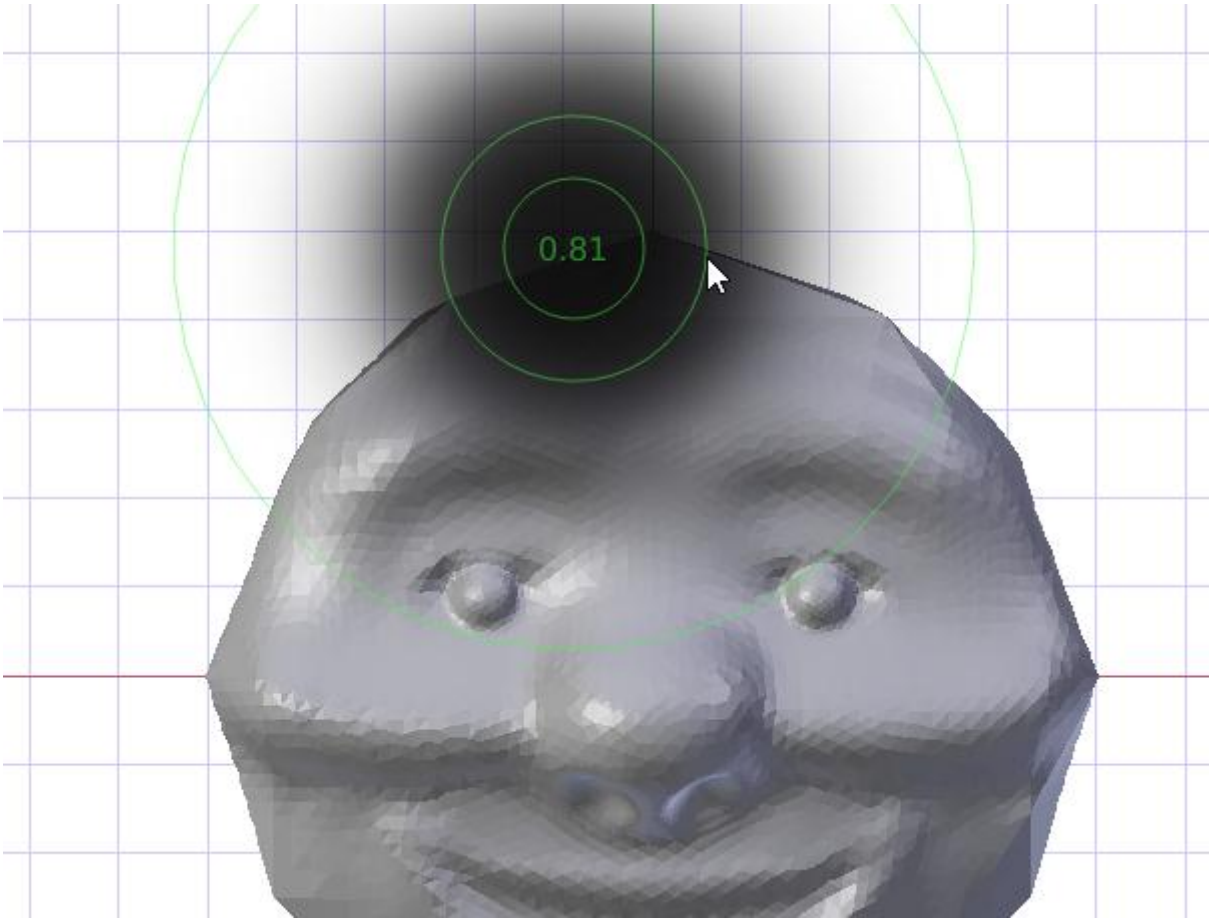

User Ortho

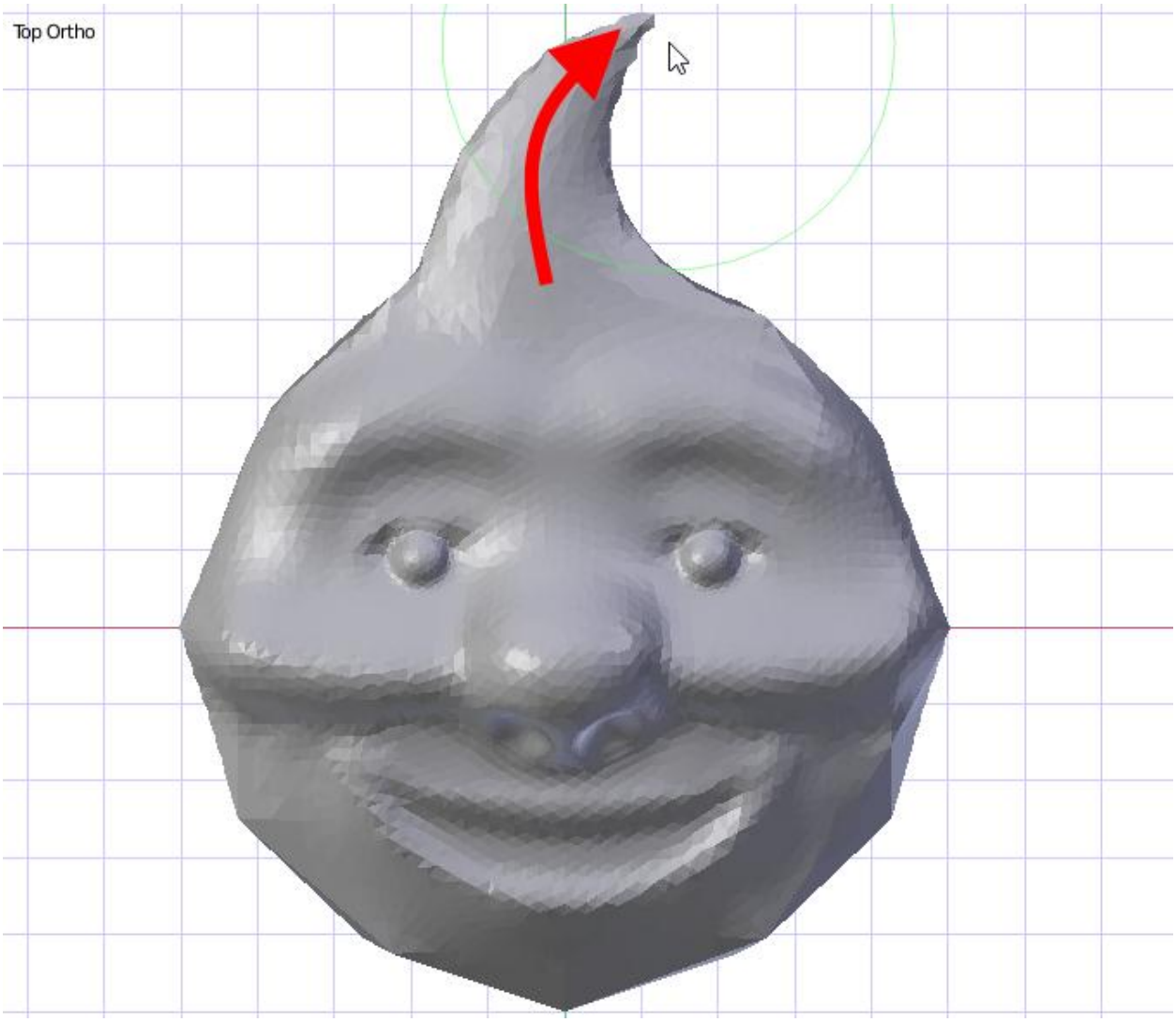

y

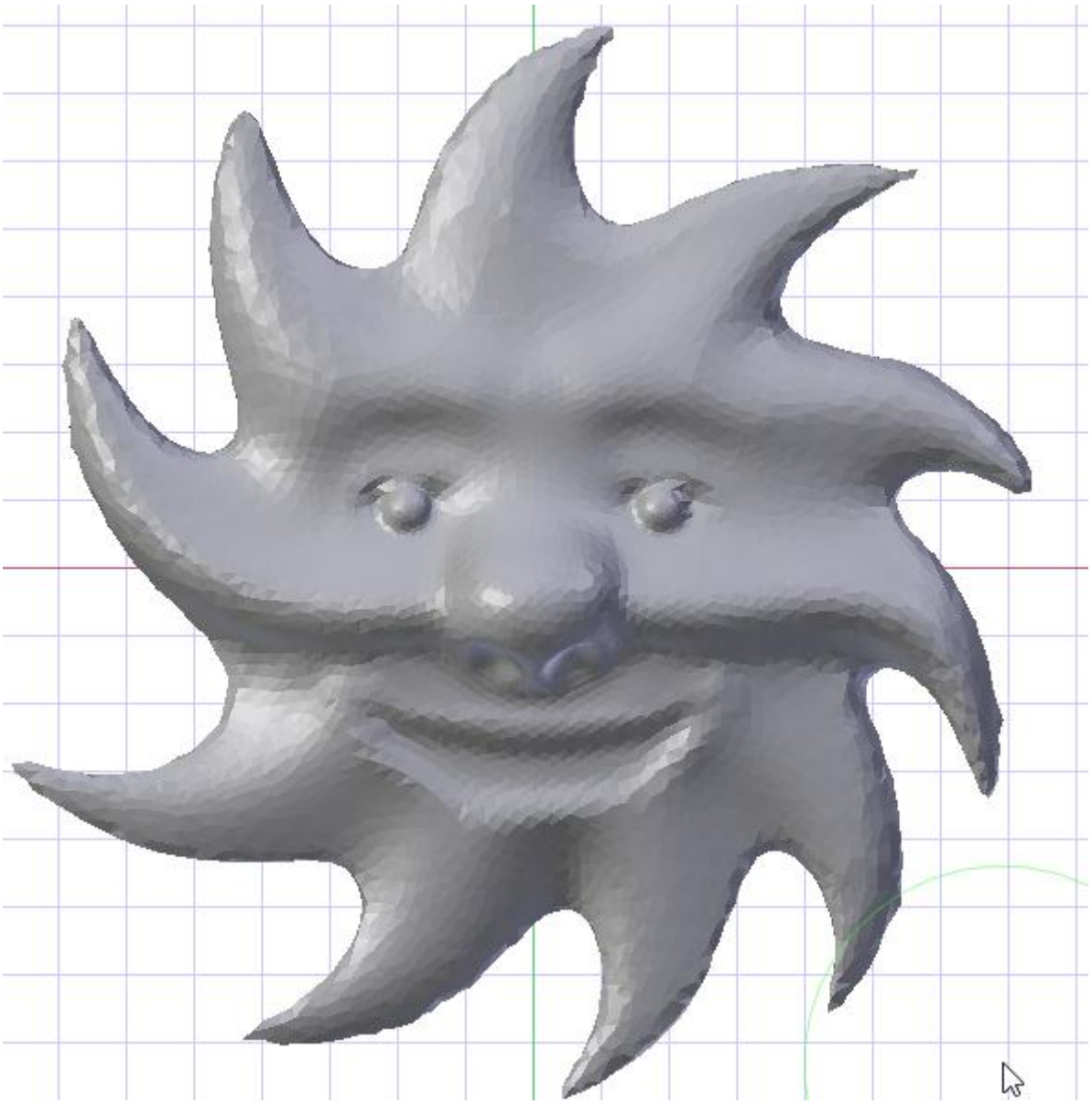


Symmetry / Lock
Mirror:
X
Y
Z
X
1
Y:
1
Z:
1


op Ortho

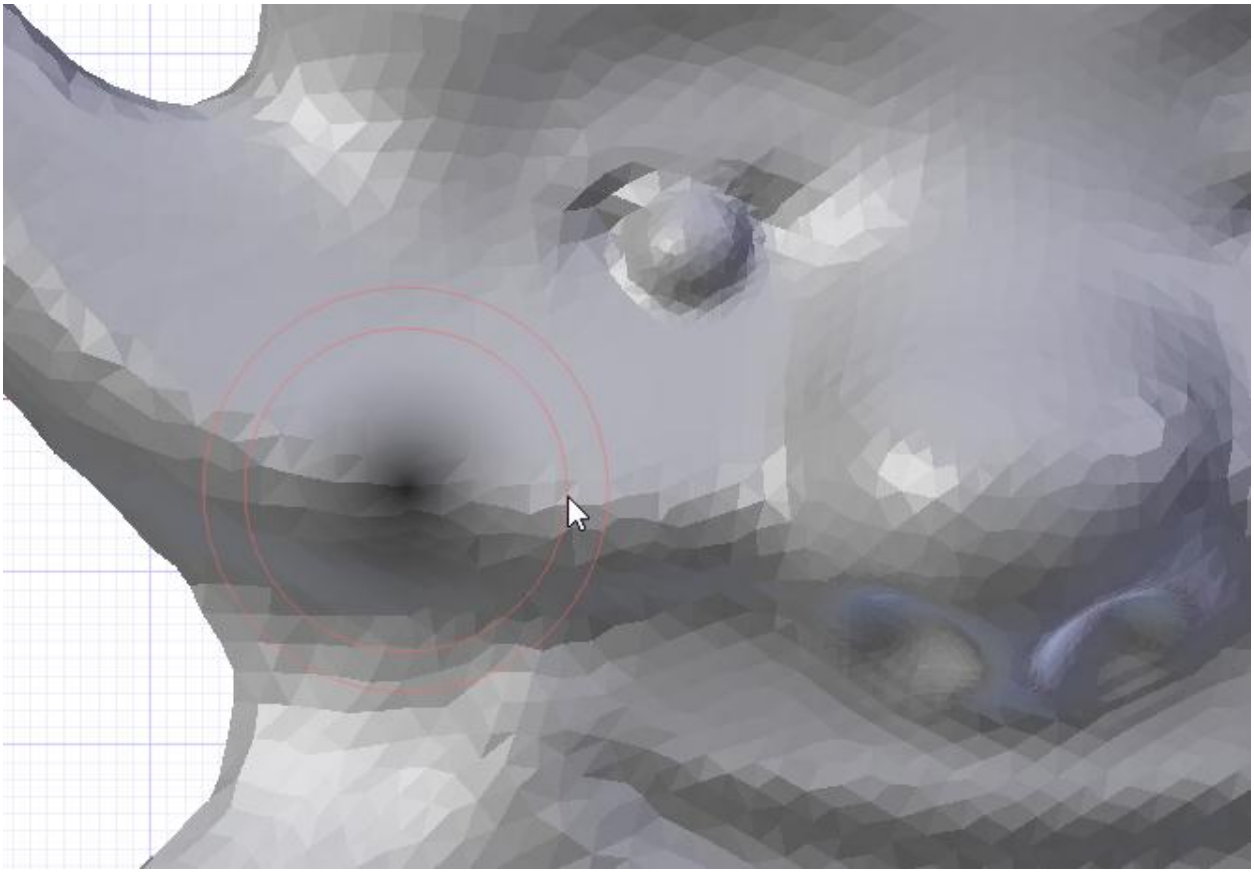

0.81

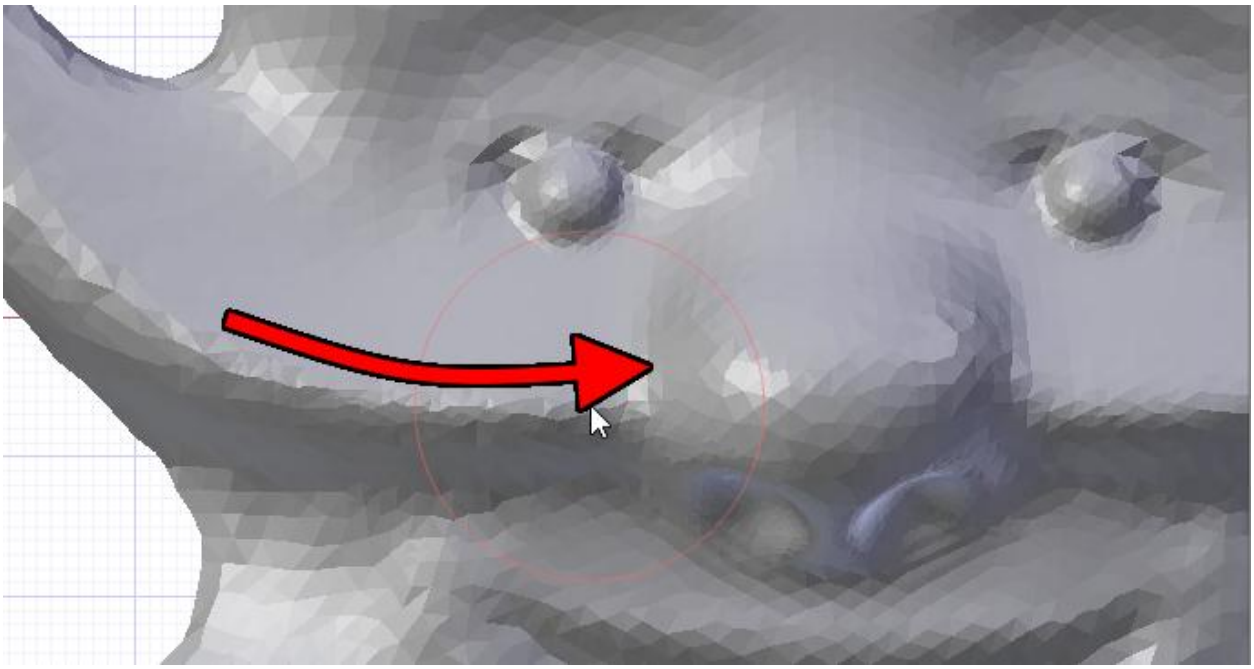

Top Ortho



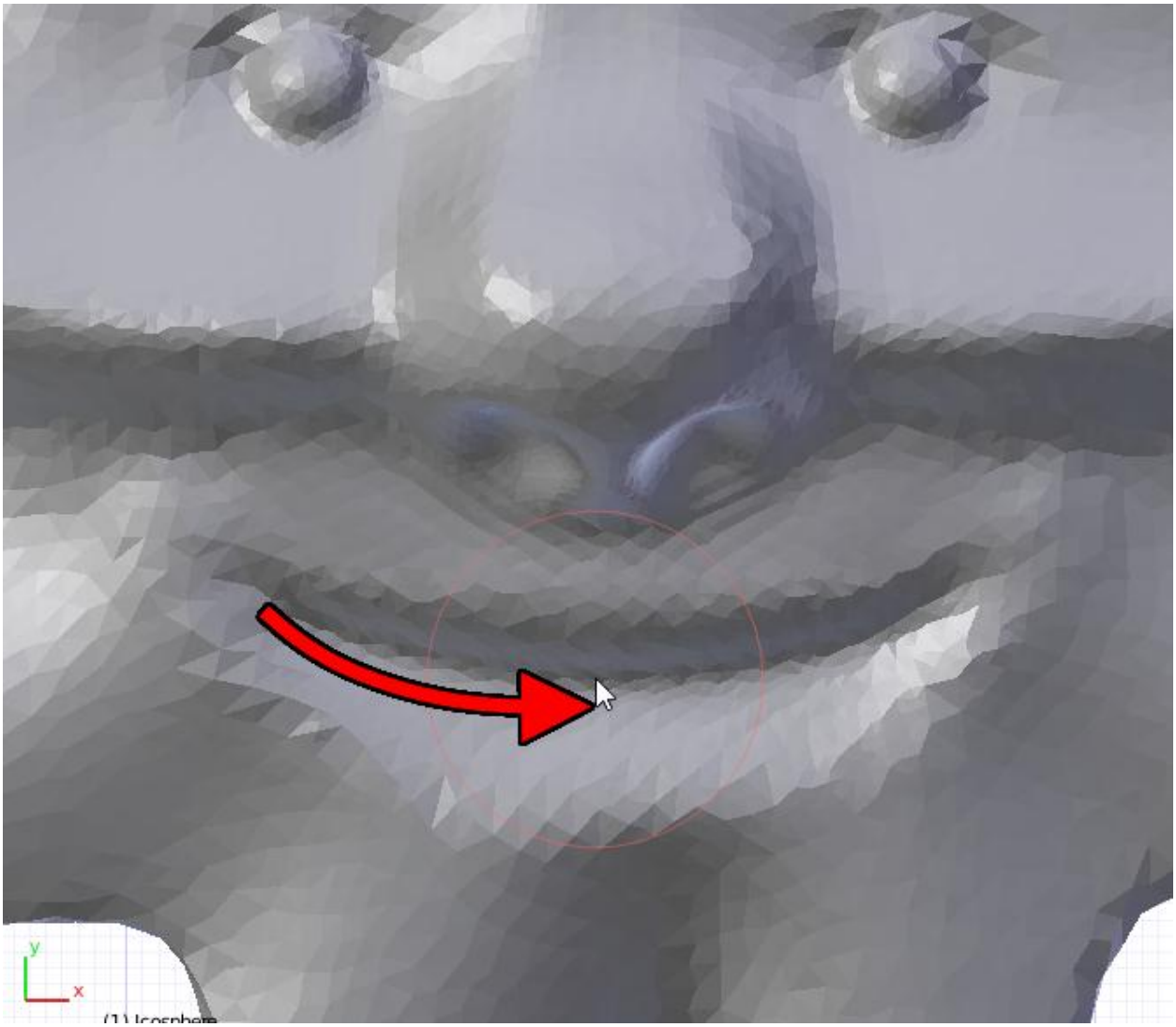
Symmetry / Lock
Mirror:
X
Y
Z
X: 1
Y: 1
Z: 1

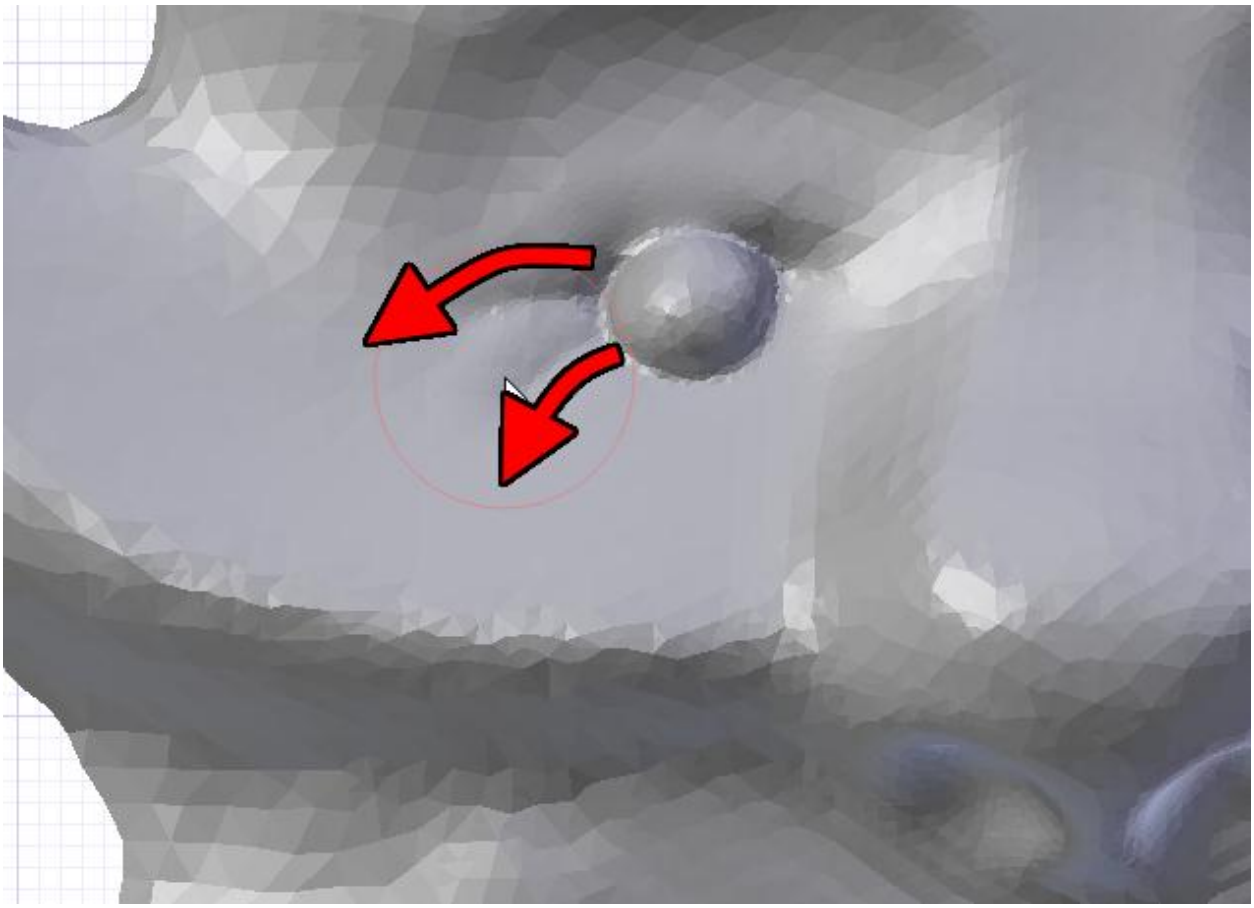
Tools
Options
Grease Pencil
Misc
Brush
Crease
2
F
Radius: 108 px
Strength: 0.250
Autosmooth: 0.000
0.500
Faces Only
Add
Subtract
Accumulate

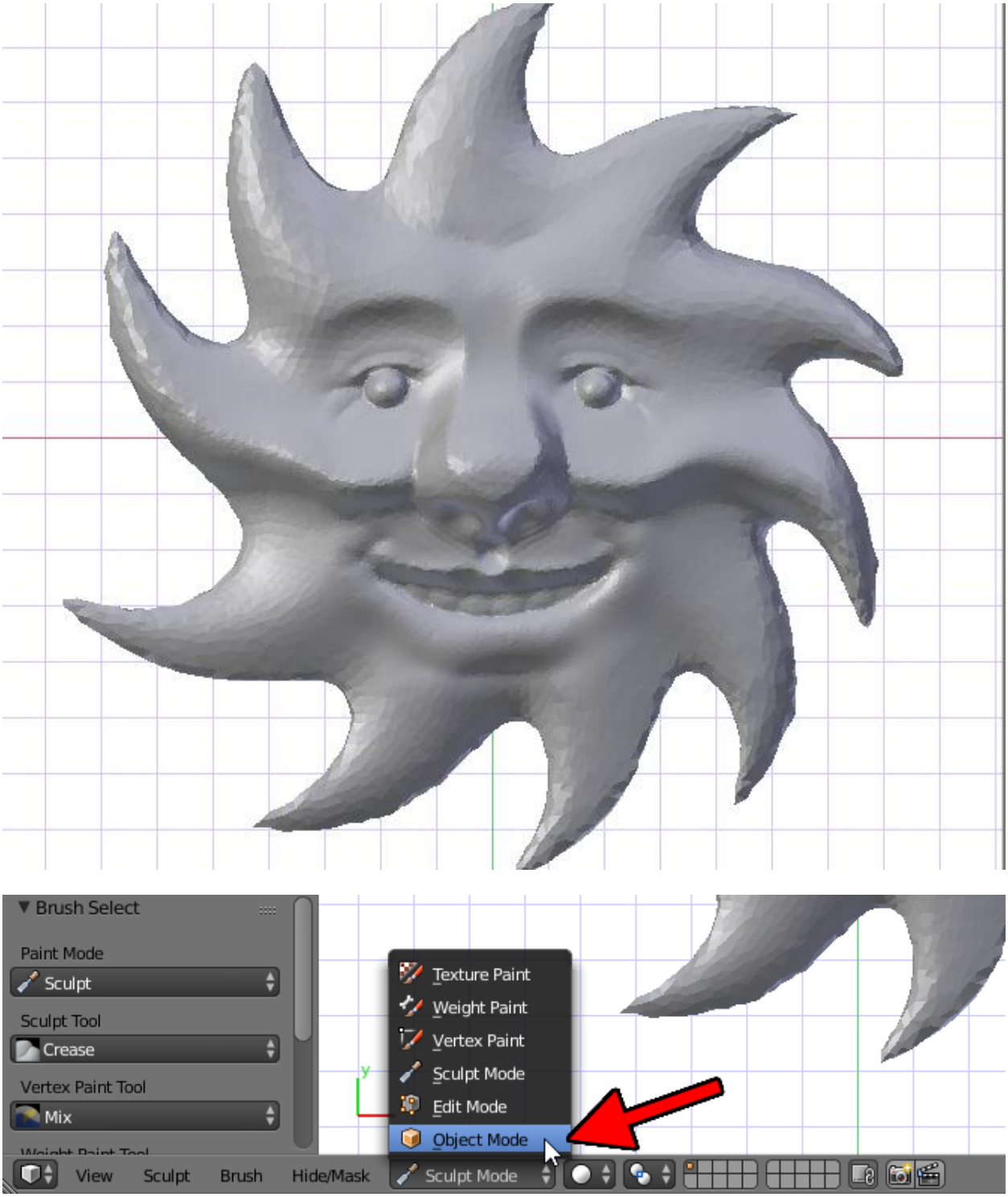




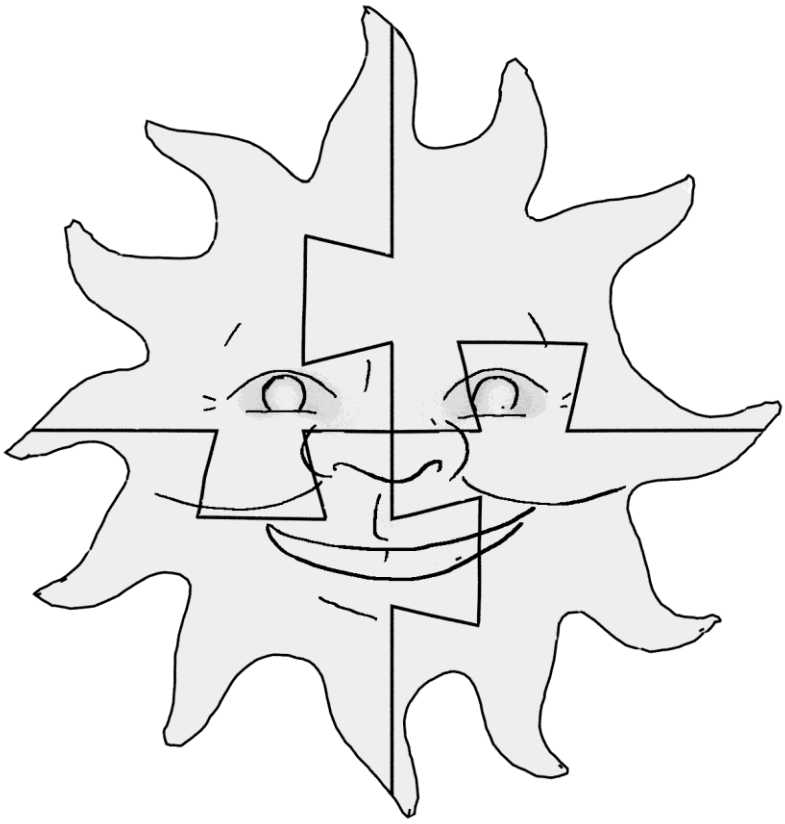
(1) Icosphere

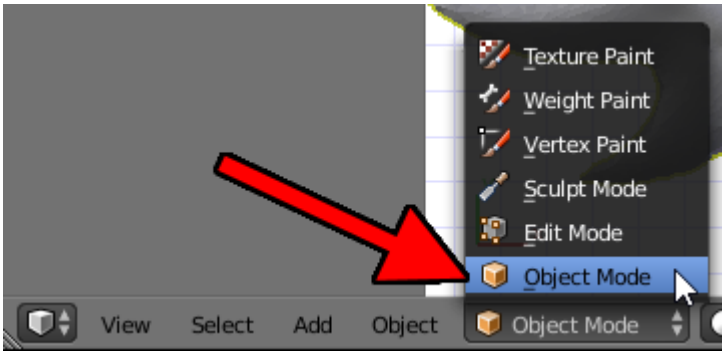

y
x

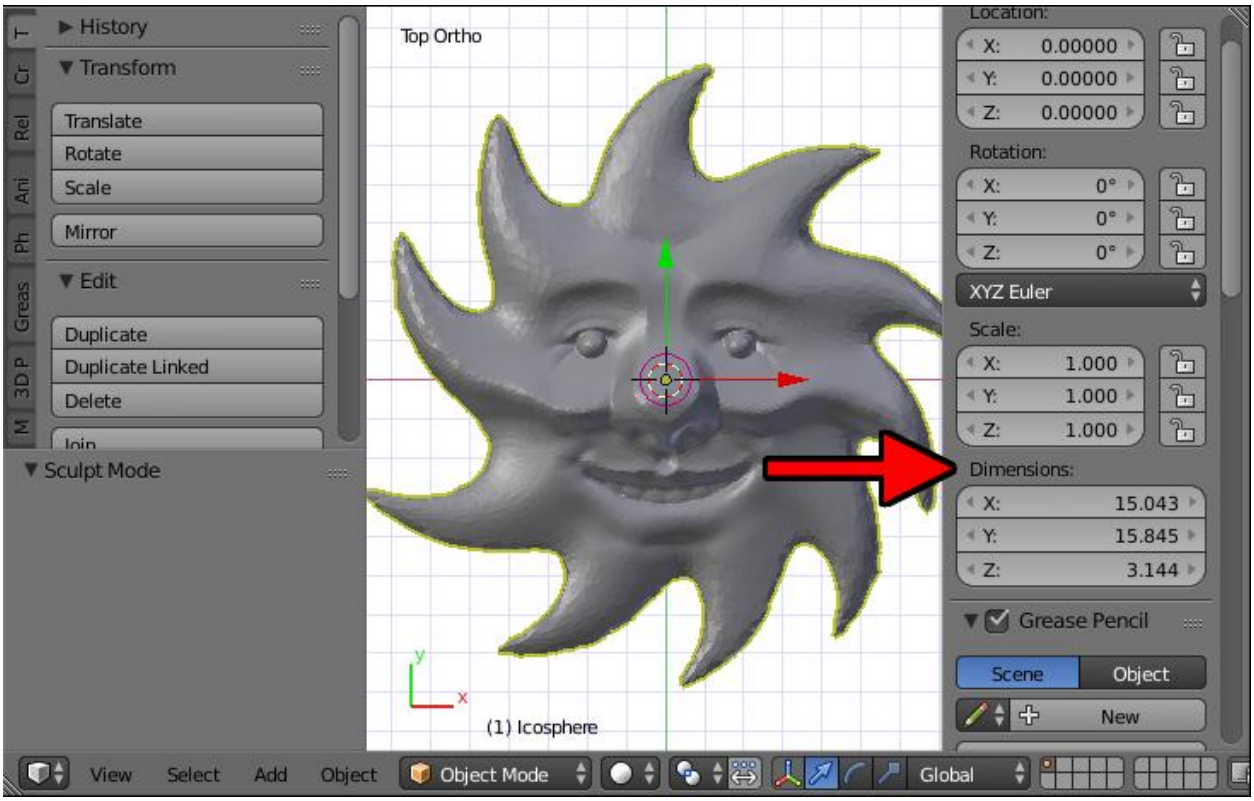


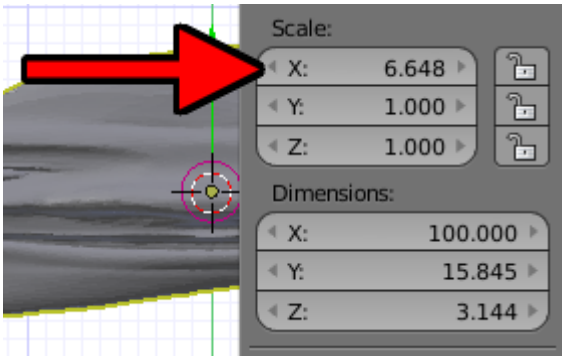

Brush Select
Paint Mode
Sculpt
Sculpt Tool
Crease
Vertex Paint Tool
Mix
Texture Paint
Weight Paint
Vertex Paint
Sculpt Mode
Edit Mode
Object Mode
View
Sculpt
Brush
Hide/Mask
Sculpt Mode

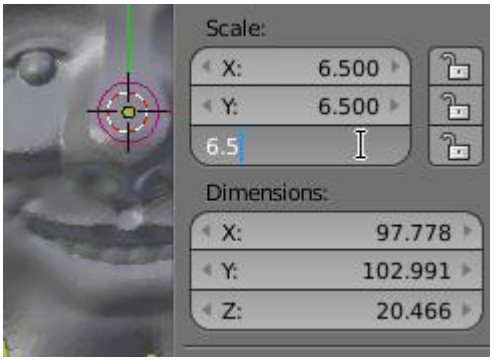
Chapter 4: Cutting a 3D Jigsaw Puzzle

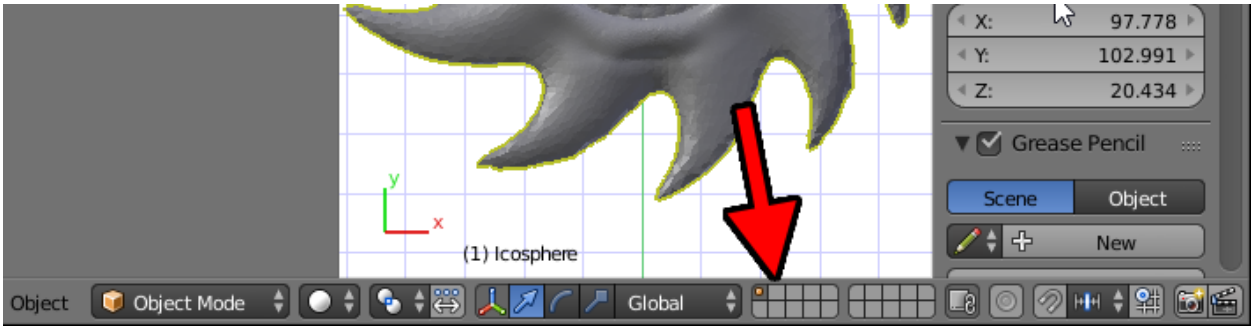


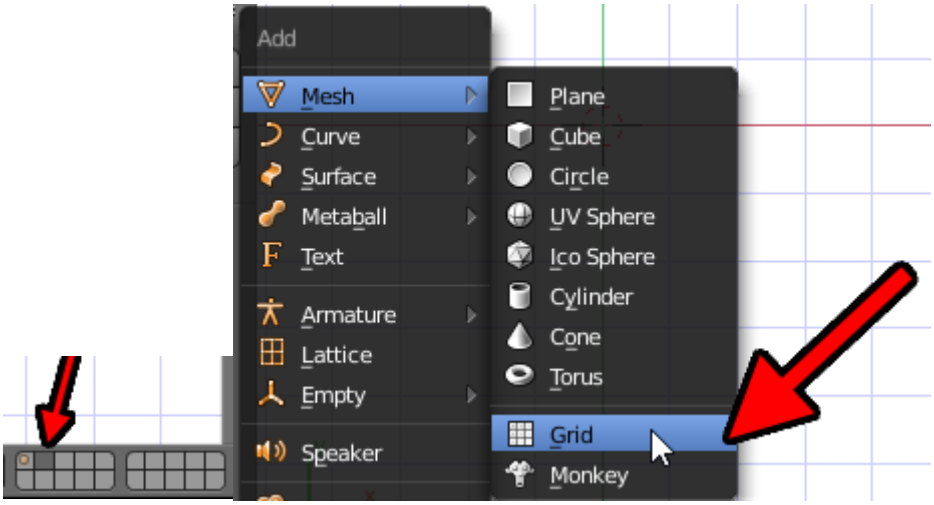


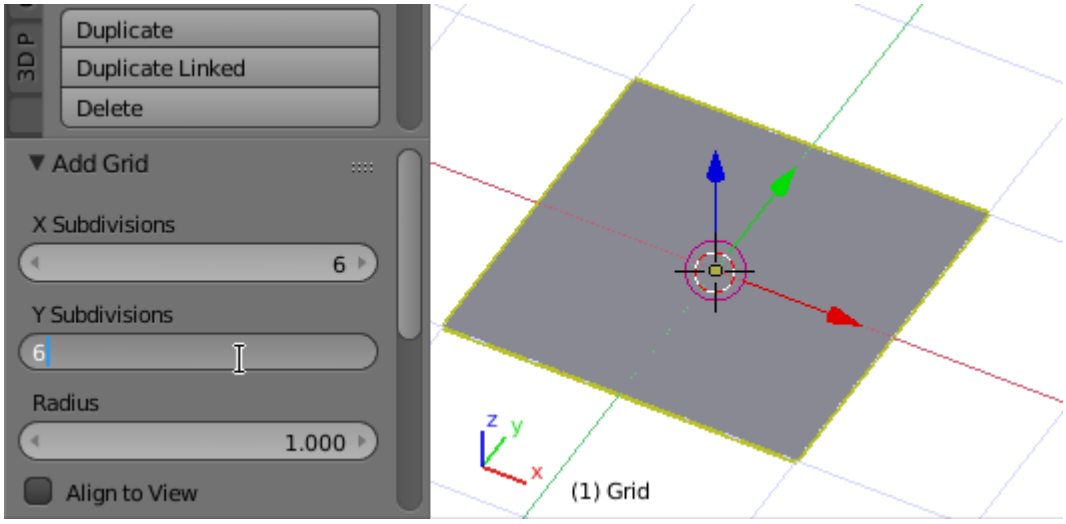

History
Transform
Translate
Rotate
Scale
Mirror
Edit
Duplicate
Duplicate Linked
Delete
Sculpt Mode
Top Ortho
(1) Icosphere
Location:
X: 0.00000
Y: 0.00000
Z: 0.00000
Rotation:
X: 0°
Y: 0°
Z: 0°
XYZ Euler
Scale:
X: 1.000
Y: 1.000
Z: 1.000
Dimensions:
X: 15.043
Y: 15.845
Z: 3.144
Grease Pencil
Scene
Object
New
View
Select
Add
Object
Object Mode
Global

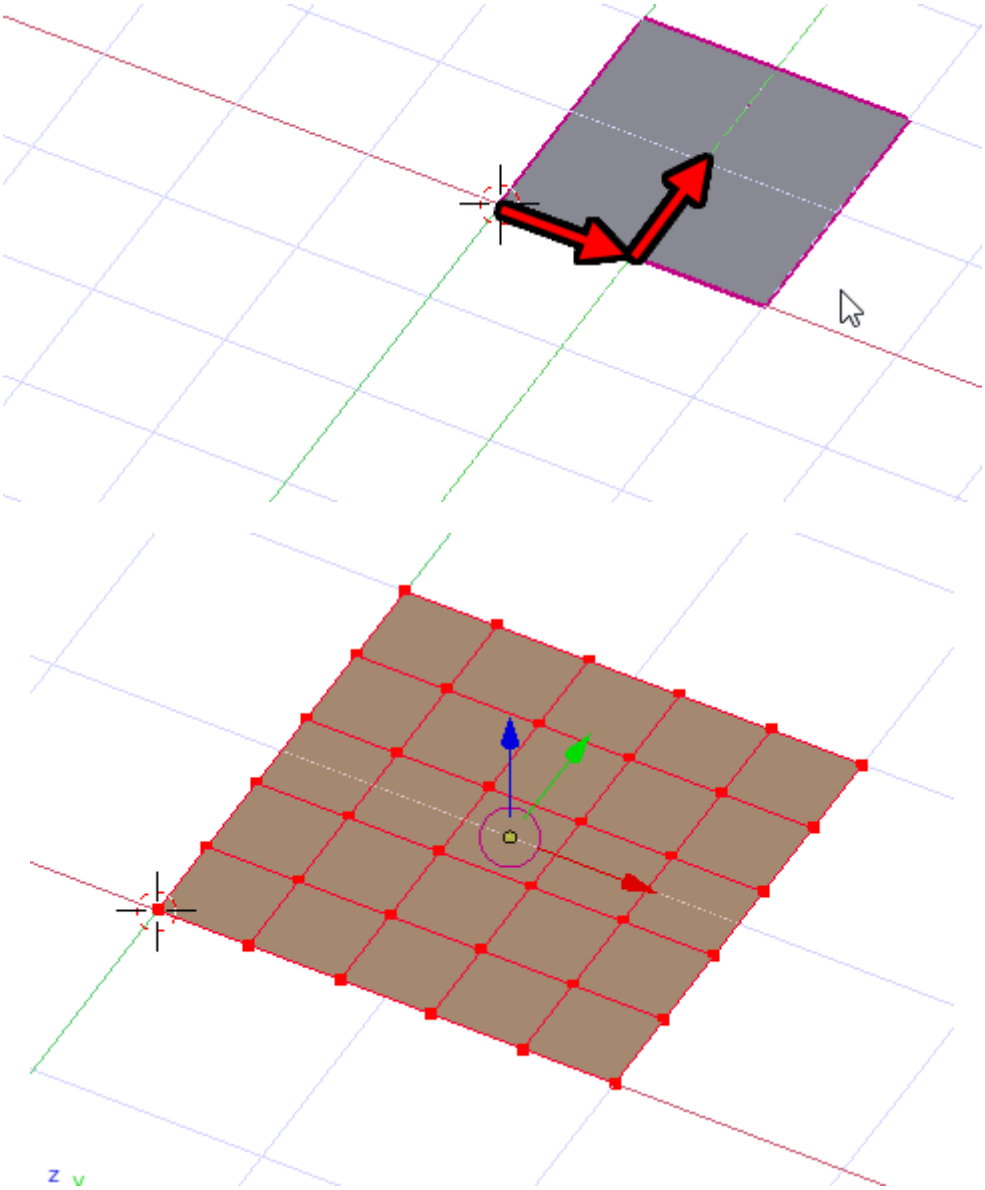

Scale:
X: 6.648
Y: 1.000
Z: 1.000
Dimensions:
X: 100.000
Y: 15.845
Z: 3.144

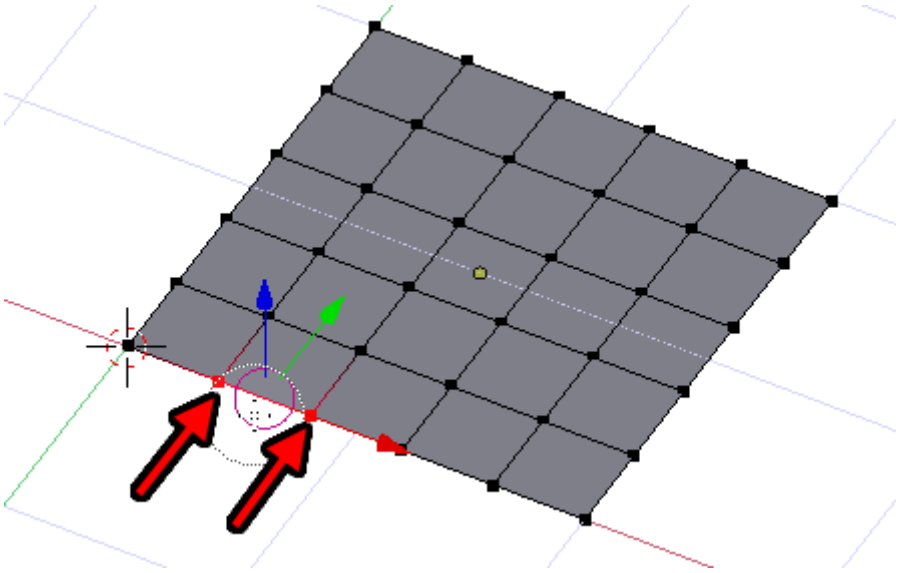

Scale:
X: 6.500
Y: 6.500
6.5
Dimensions:
X: 97.778
Y: 102.991
Z: 20.466

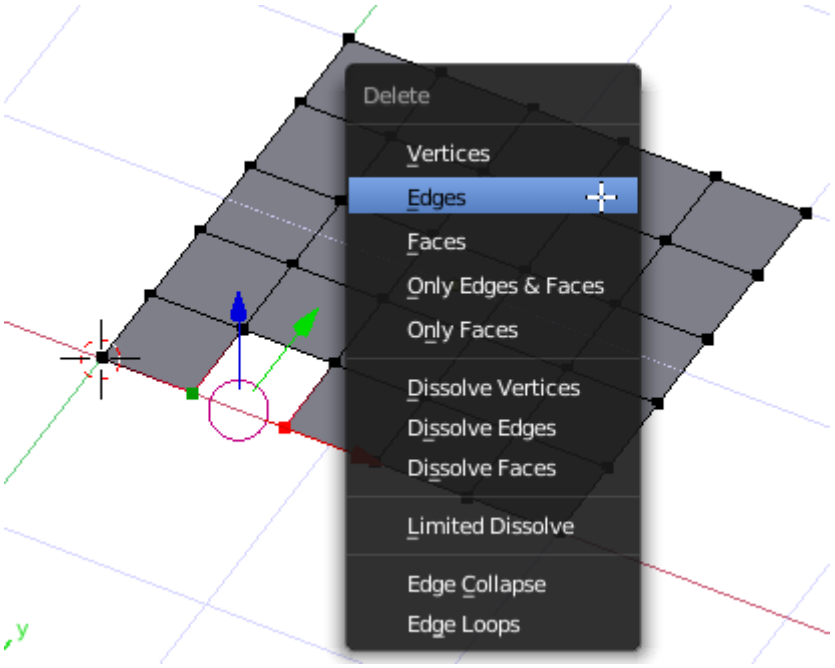

X: 97.778
Y: 102.991
Z: 20.434
Grease Pencil
Scene
Object
New
(1) Icosphere
Object
Object Mode
Global

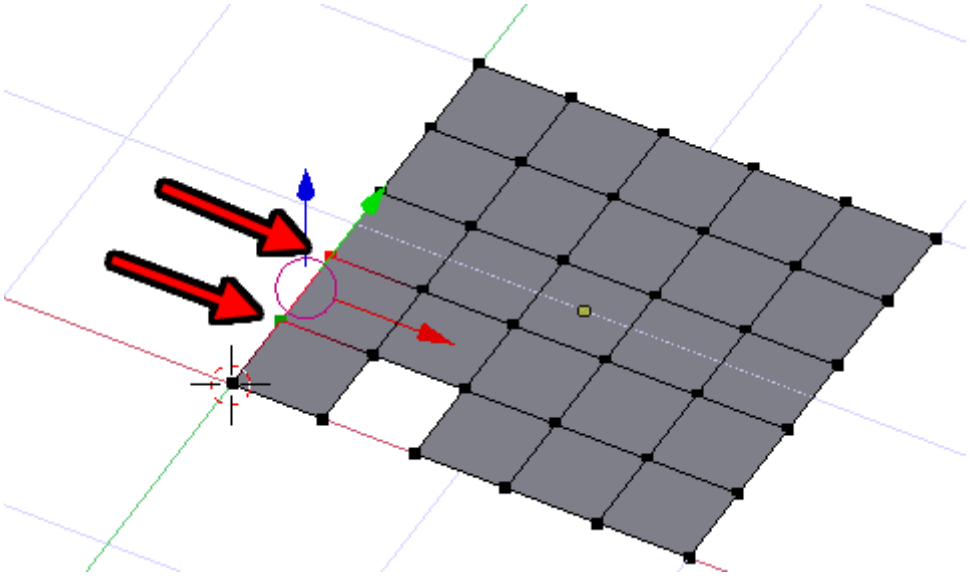

Add
Mesh
Curve
Surface
Metaball
Text
Armature
Lattice
Empty
Speaker
Plane
Cube
Circle
UV Sphere
Ico Sphere
Cylinder
Cone
Torus
Grid
Monkey

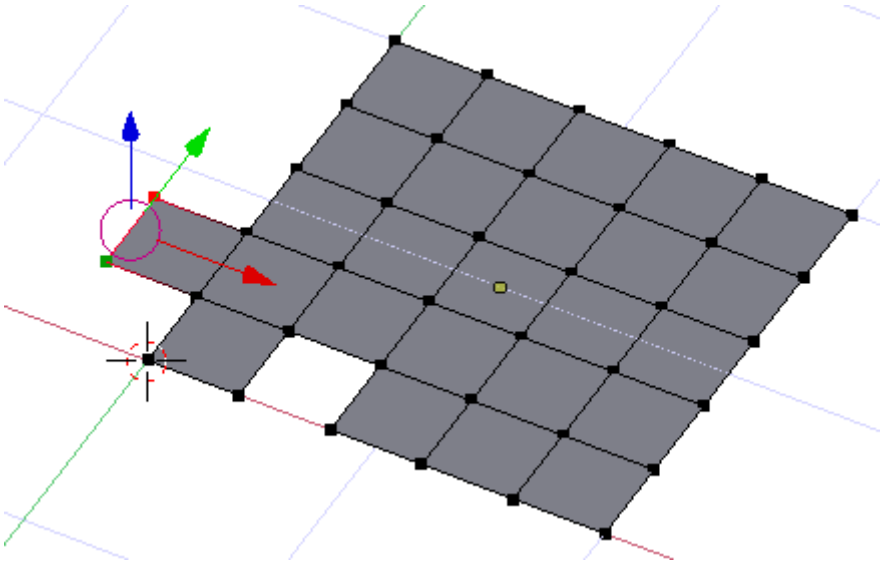

3D P
Duplicate
Duplicate Linked
Delete
Add Grid
X Subdivisions
6
Y Subdivisions
6
Radius
1.000
Align to View
(1) Grid

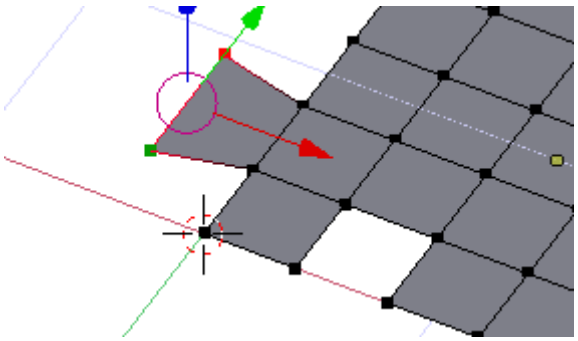

z
y

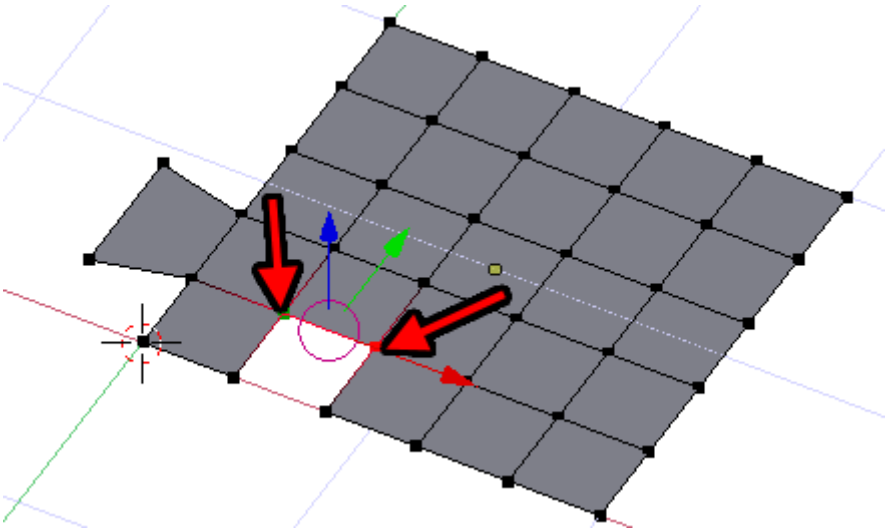


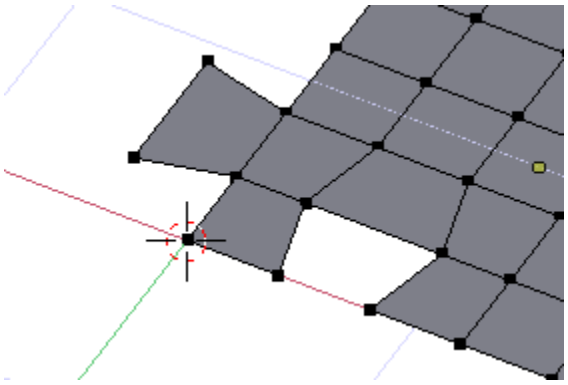

Delete
Vertices
Edges
Faces
Only Edges & Faces
Only Faces
Dissolve Vertices
Dissolve Edges
Dissolve Faces
Limited Dissolve
Edge Collapse
Edge Loops

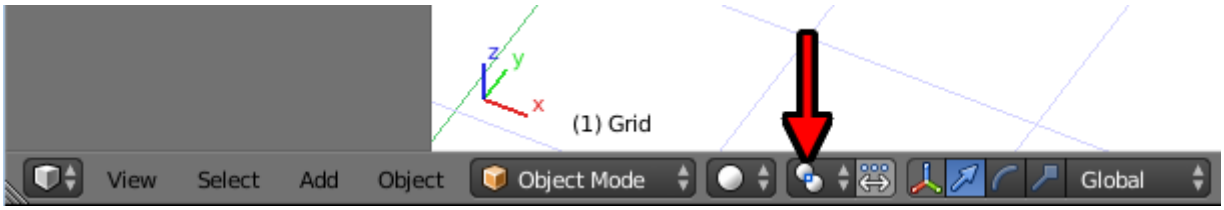


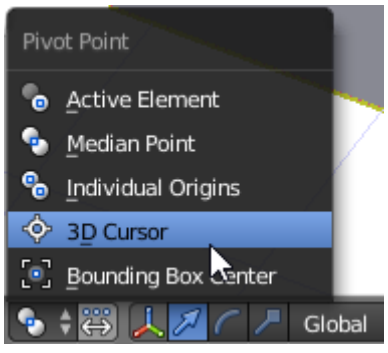


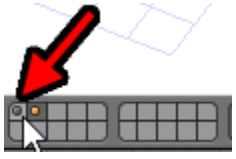


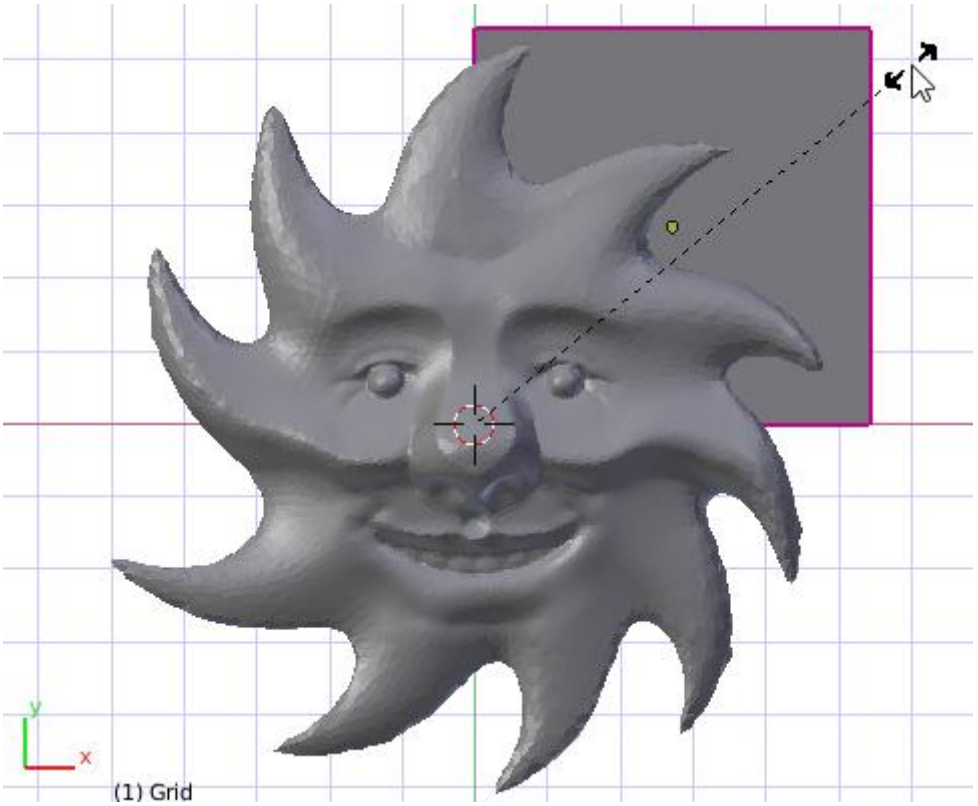


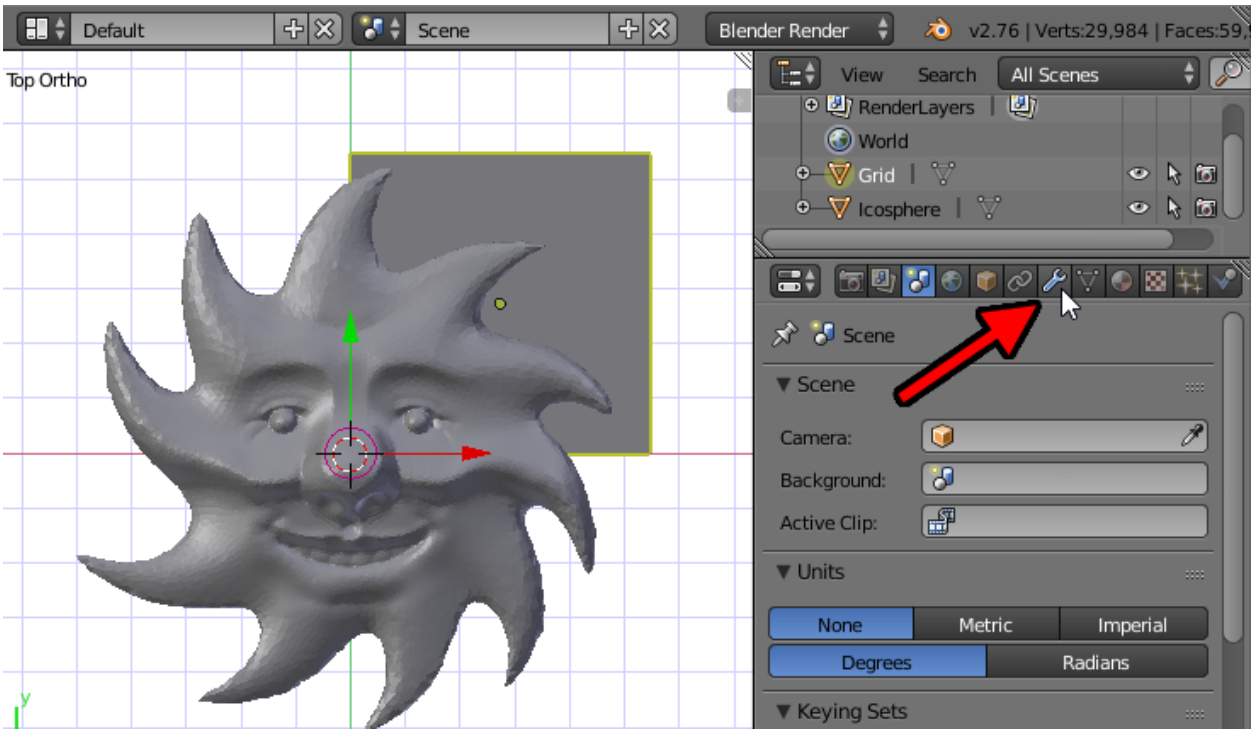


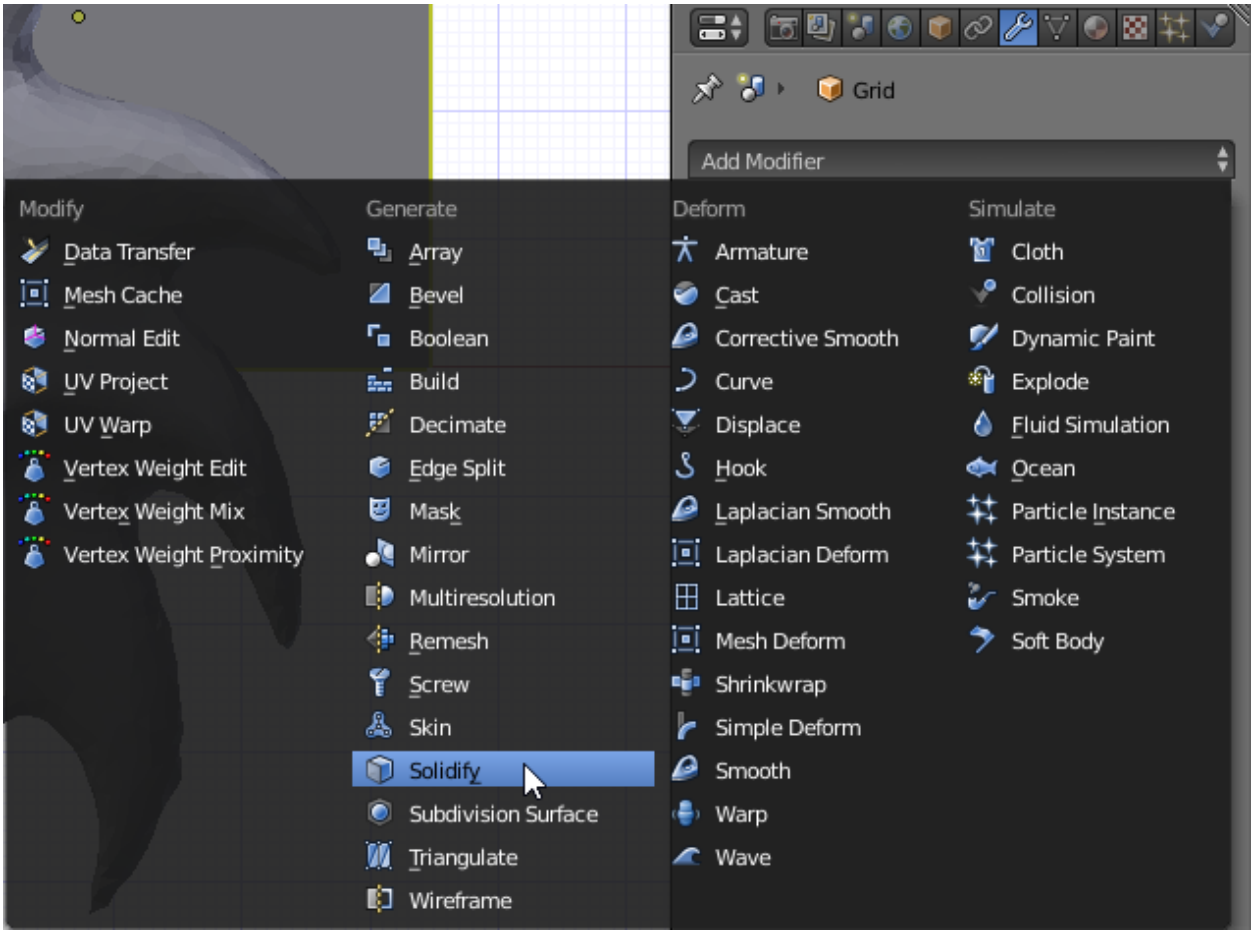

(1) Grid
View
Select
Add
Object
Object Mode
Global

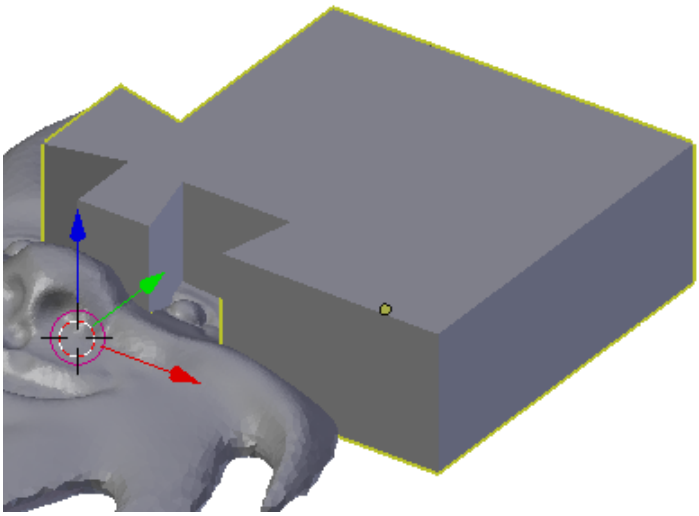

Pivot Point
Active Element
Median Point
Individual Origins
3D Cursor
Bounding Box Center
Global



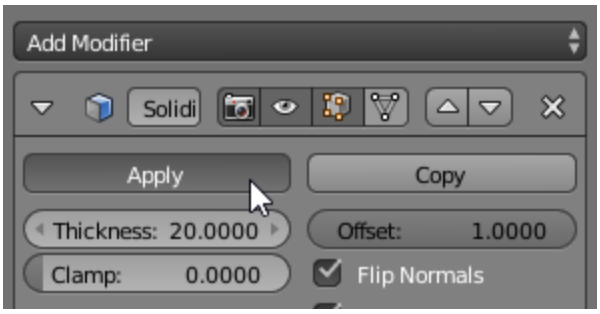

y
x
(1) Grid

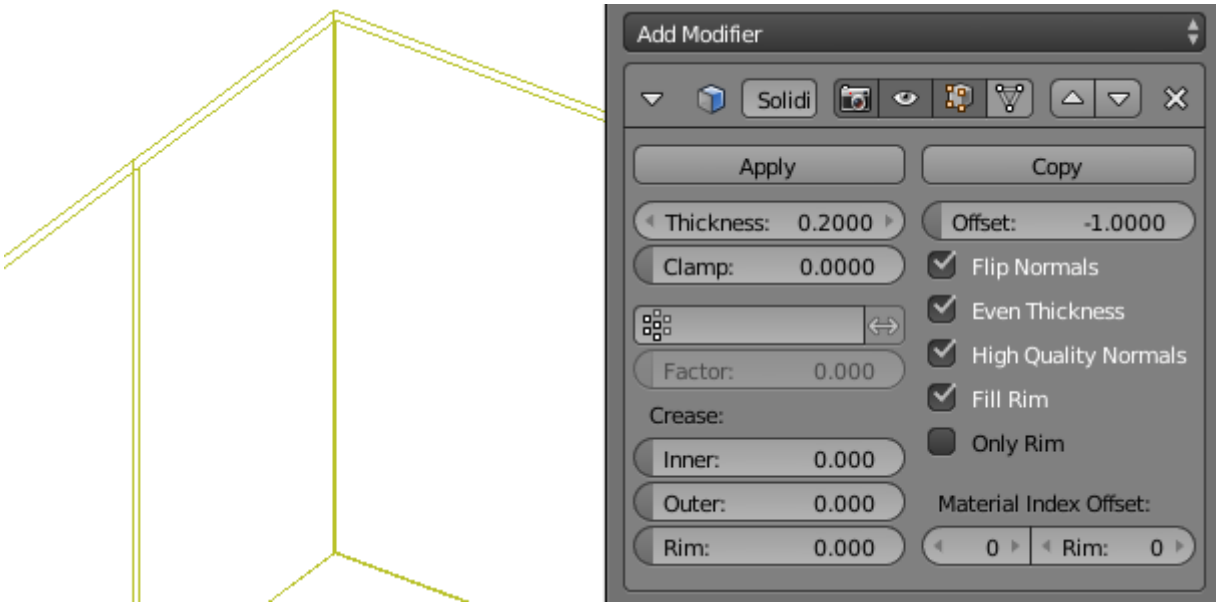

Default
Scene
Blender Render
v2.76 | Verts:29,984 | Faces:59,
Top Ortho
View
Search
All Scenes
RenderLayers
World
Grid
Icosphere
Scene
Scene
Camera:
Background:
Active Clip:
Units
None
Metric
Imperial
Degrees
Radians
Keying Sets

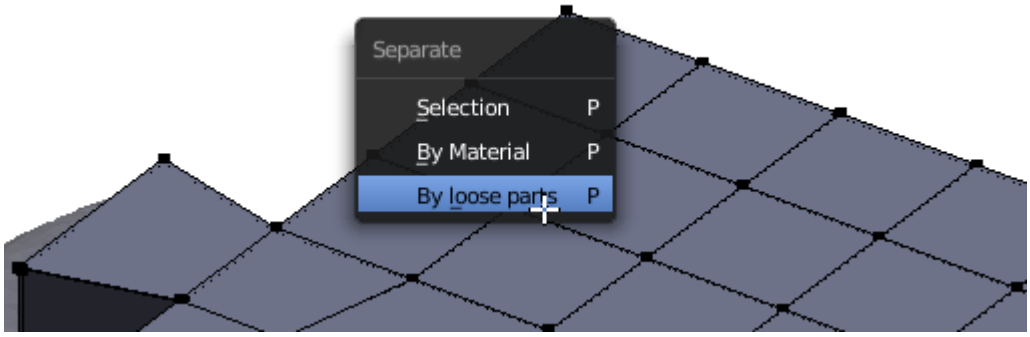

Grid
Add Modifier
Modify
Data Transfer
Mesh Cache
Normal Edit
UV Project
UV Warp
Vertex Weight Edit
Vertex Weight Mix
Vertex Weight Proximity
Generate
Array
Bevel
Boolean
Build
Decimate
Edge Split
Mask
Mirror
Multiresolution
Remesh
Screw
Skin
Solidify
Subdivision Surface
Triangulate
Wireframe
Deform
Armature
Cast
Corrective Smooth
Curve
Displace
Hook
Laplacian Smooth
Laplacian Deform
Lattice
Mesh Deform
Shrinkwrap
Simple Deform
Smooth
Warp
Wave
Simulate
Cloth
Collision
Dynamic Paint
Explode
Fluid Simulation
Ocean
Particle Instance
Particle System
Smoke
Soft Body

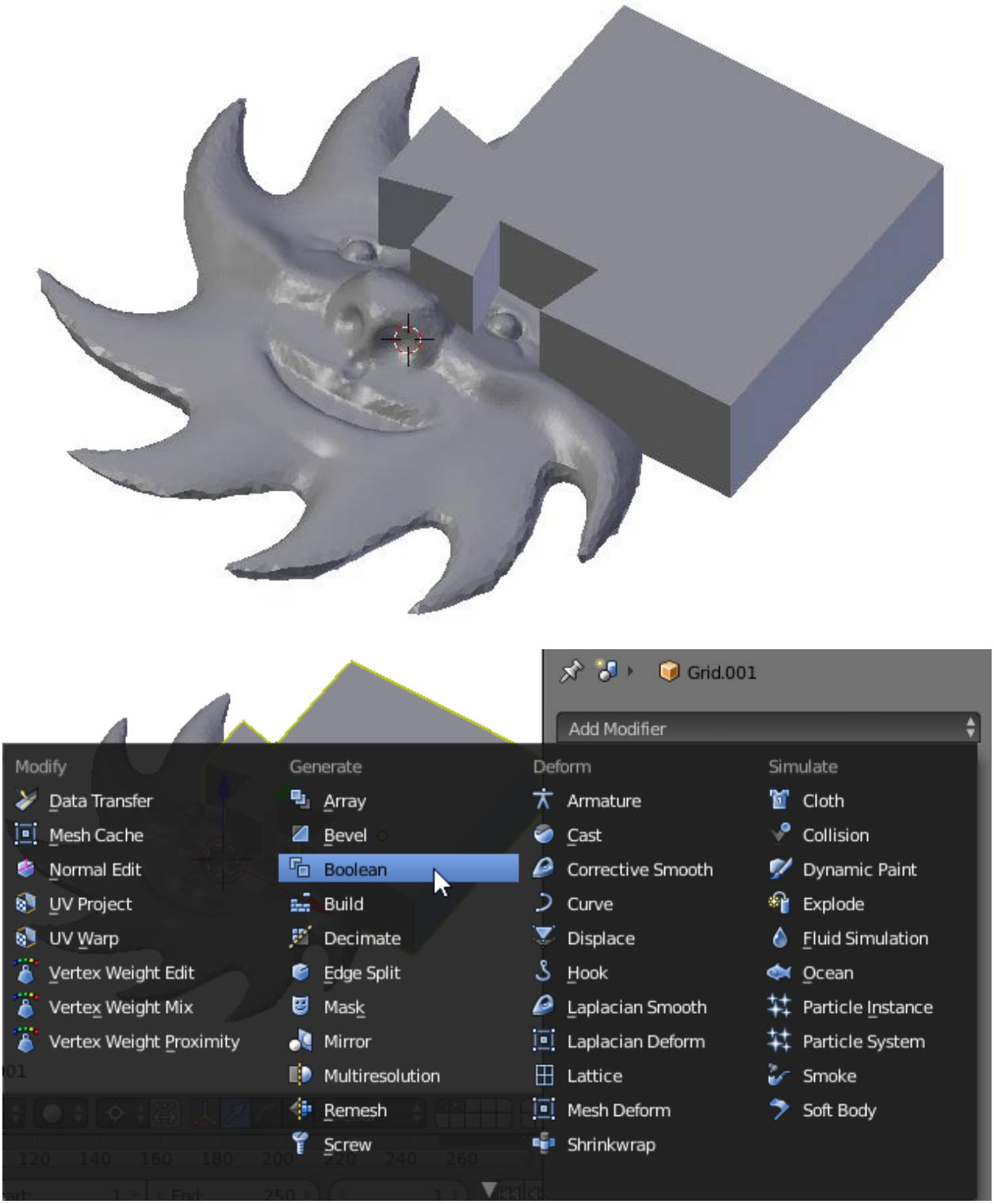


Add Modifier
Solidi
Apply
Copy
Thickness: 20.0000
Offset: 1.0000
Clamp: 0.0000
Flip Normals
Even Thickness
High Quality Norm...
Factor: 0.000
Fill Rim
Crease:
Only Rim
Inner: 0.000
Outer: 0.000
Material Index Offset:
Rim: 0.000
0
Rim: 0

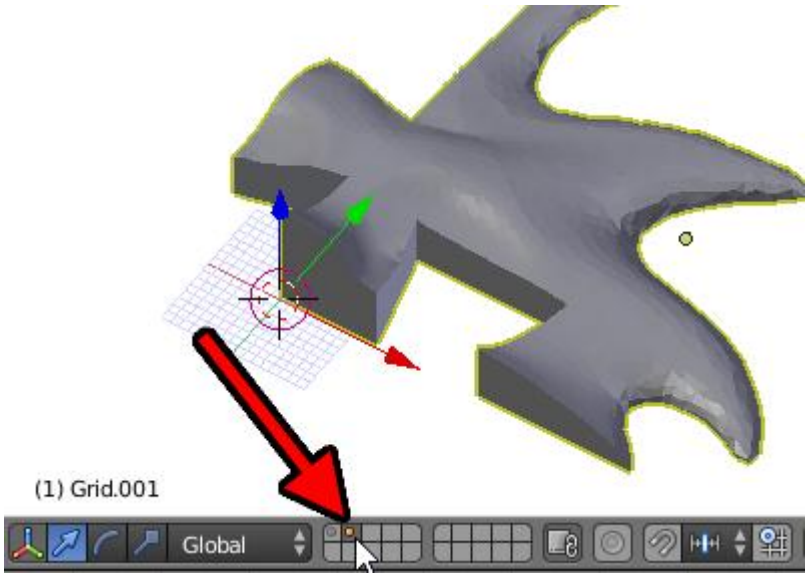
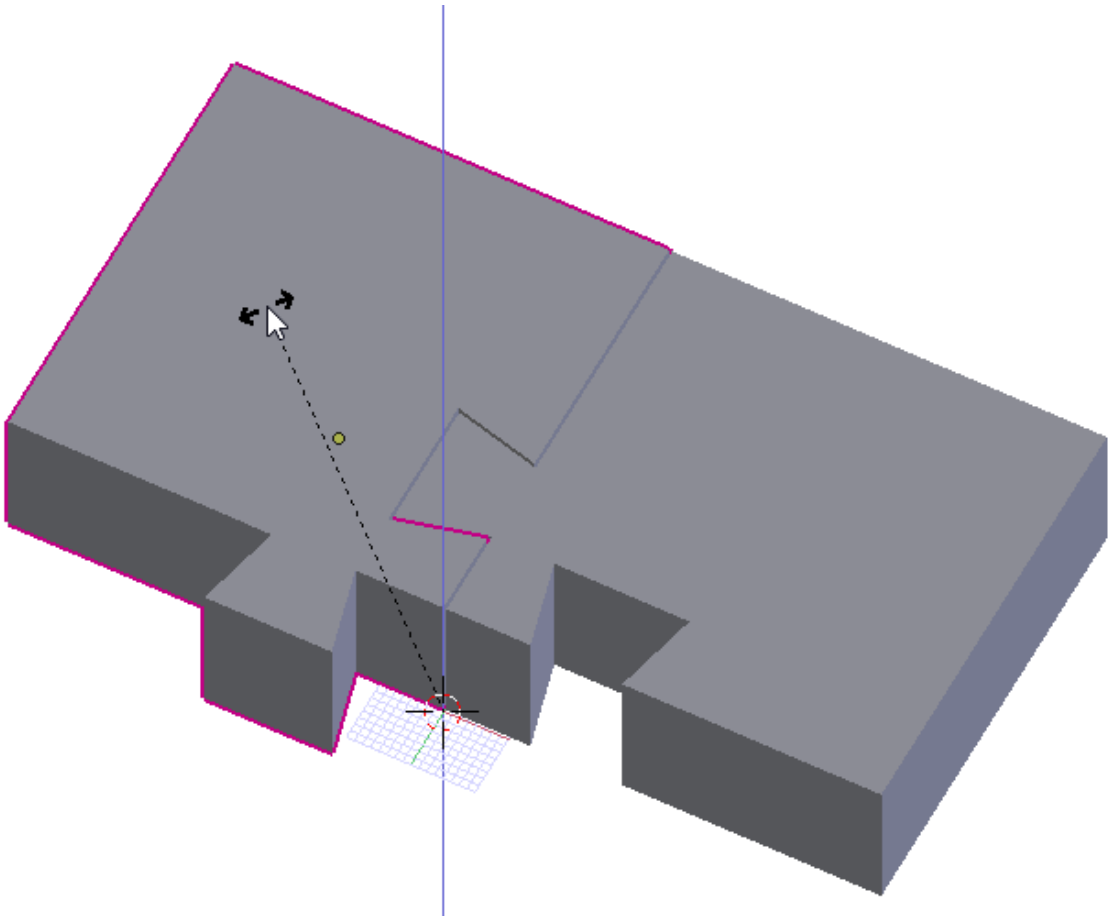
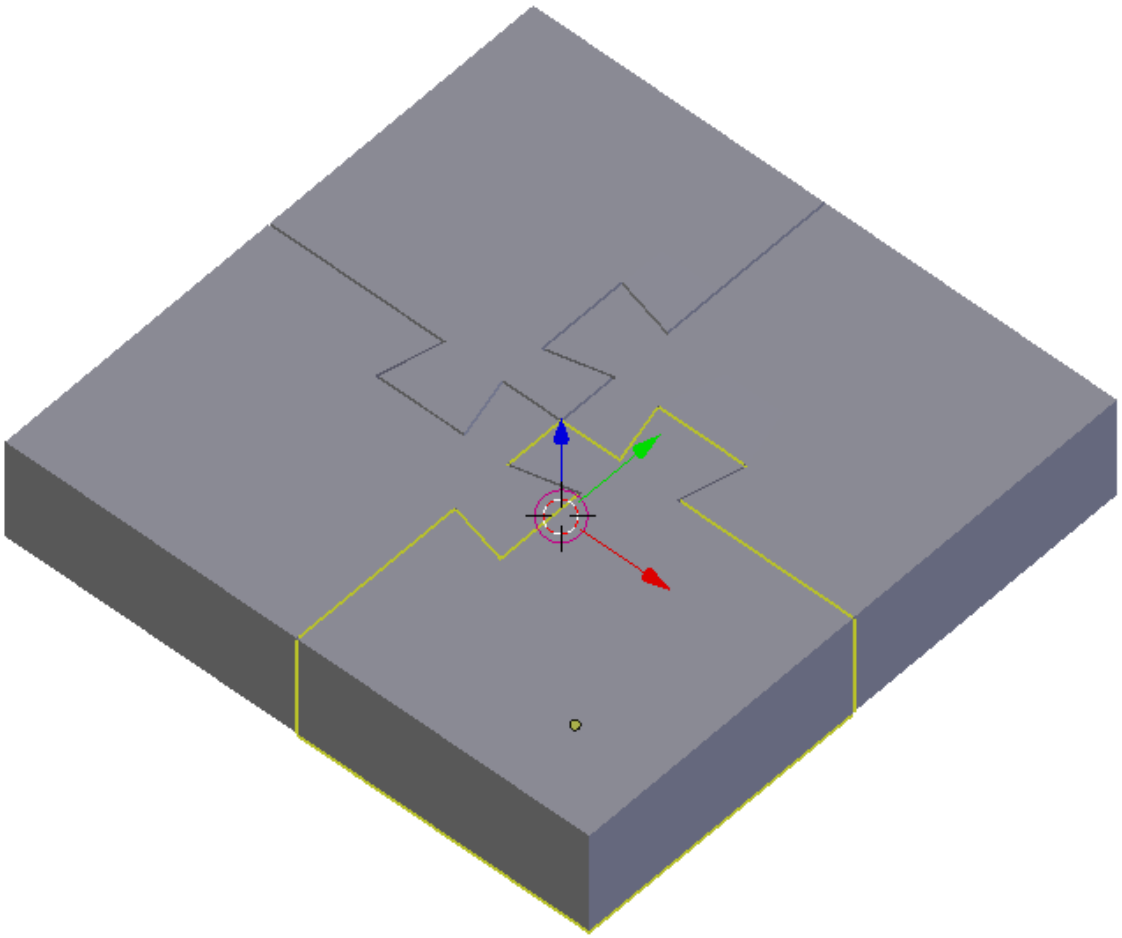
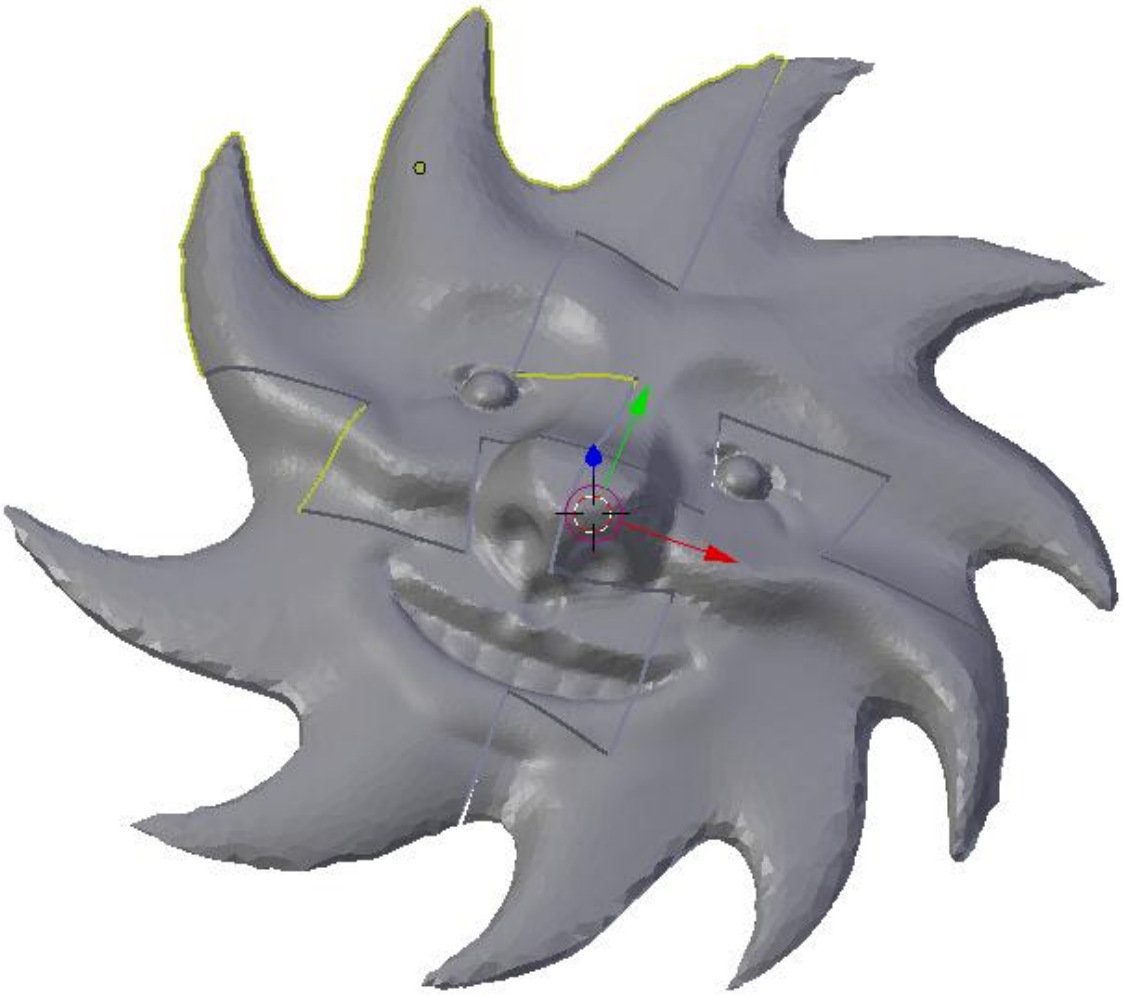
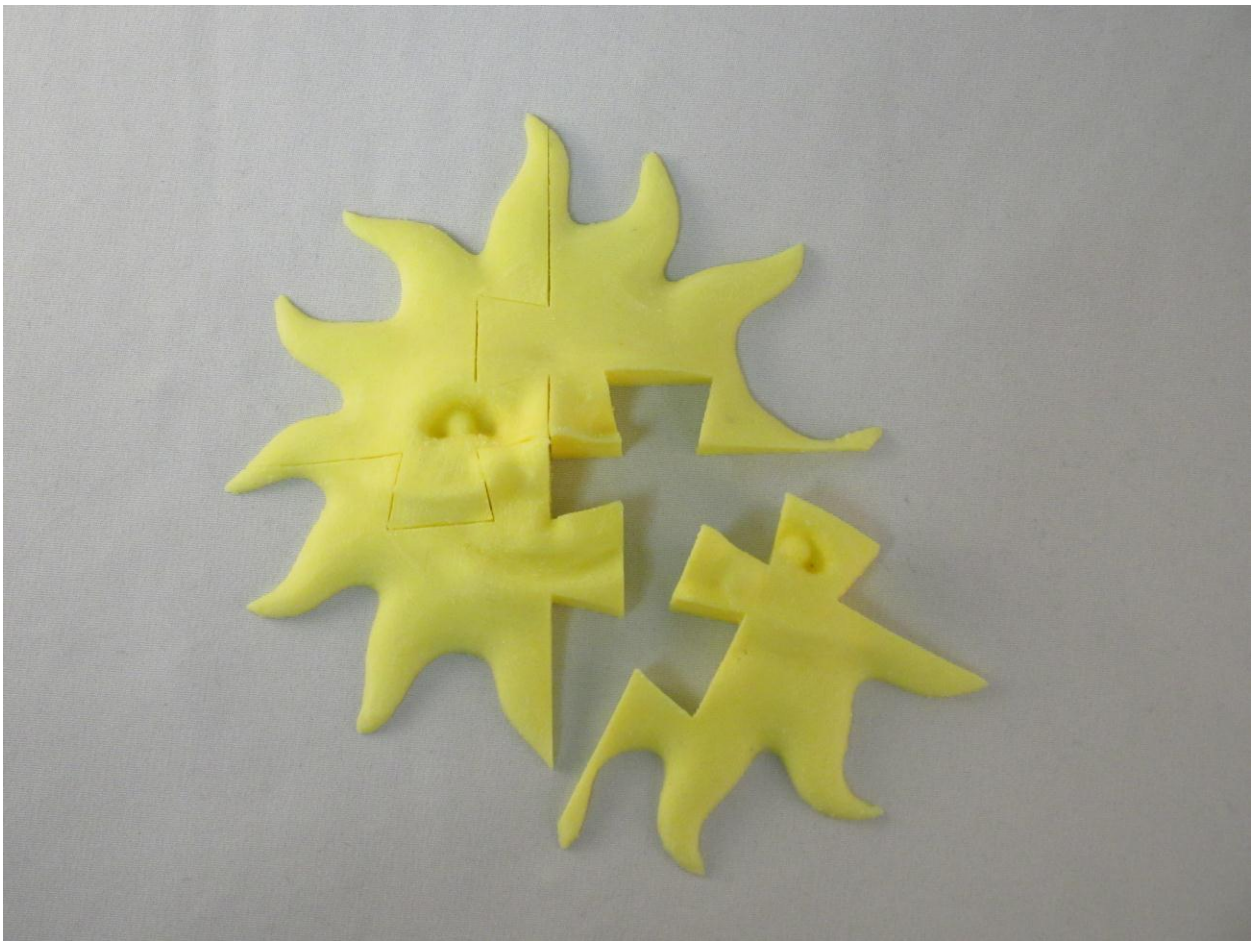
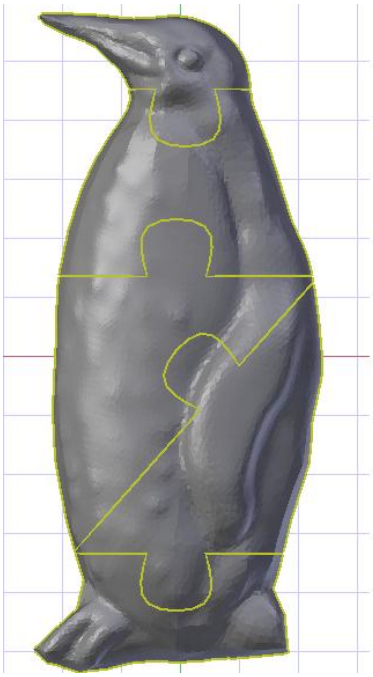
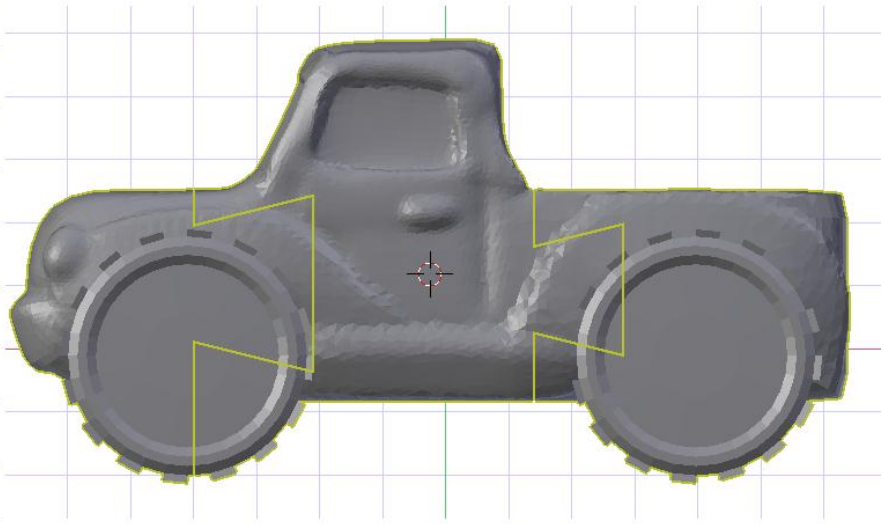

Add Modifier
Solidi
Apply
Copy
Thickness: 20.0000
Offset: 1.0000
Clamp: 0.0000
Flip Normals


Add Modifier
Solidi
Apply
Copy
Thickness: 0.2000
Offset: -1.0000
Clamp: 0.0000
Flip Normals
Even Thickness
High Quality Normals
Factor: 0.000
Fill Rim
Crease:
Only Rim
Inner: 0.000
Outer: 0.000
Material Index Offset:
Rim: 0.000
0
Rim: 0


Separate
Selection P
By Material P
By loose parts P


Grid.001
Add Modifier
Modify
Data Transfer
Mesh Cache
Normal Edit
UV Project
UV Warp
Vertex Weight Edit
Vertex Weight Mix
Vertex Weight Proximity
Generate
Array
Bevel
Boolean
Build
Decimate
Edge Split
Mask
Mirror
Multiresolution
Remesh
Screw
Deform
Armature
Cast
Corrective Smooth
Curve
Displace
Hook
Laplacian Smooth
Laplacian Deform
Lattice
Mesh Deform
Shrinkwrap
Simulate
Cloth
Collision
Dynamic Paint
Explode
Fluid Simulation
Ocean
Particle Instance
Particle System
Smoke
Soft Body

Boolean
Apply
Copy
Operation:
Object:
Intersect
Icosphere


(1) Grid.001
Global

Boolean
Apply
Copy
Operation:
Object:
Intersect
Icosphere