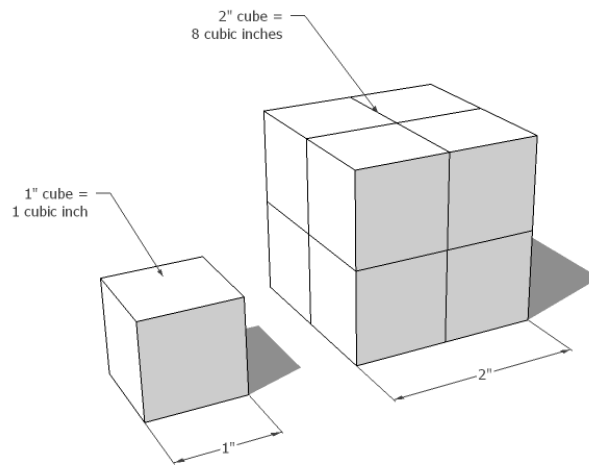
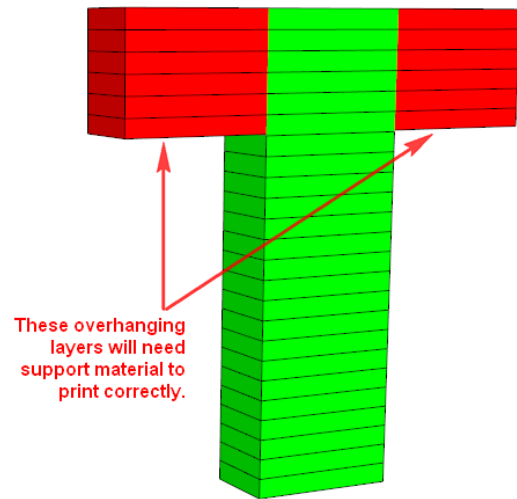
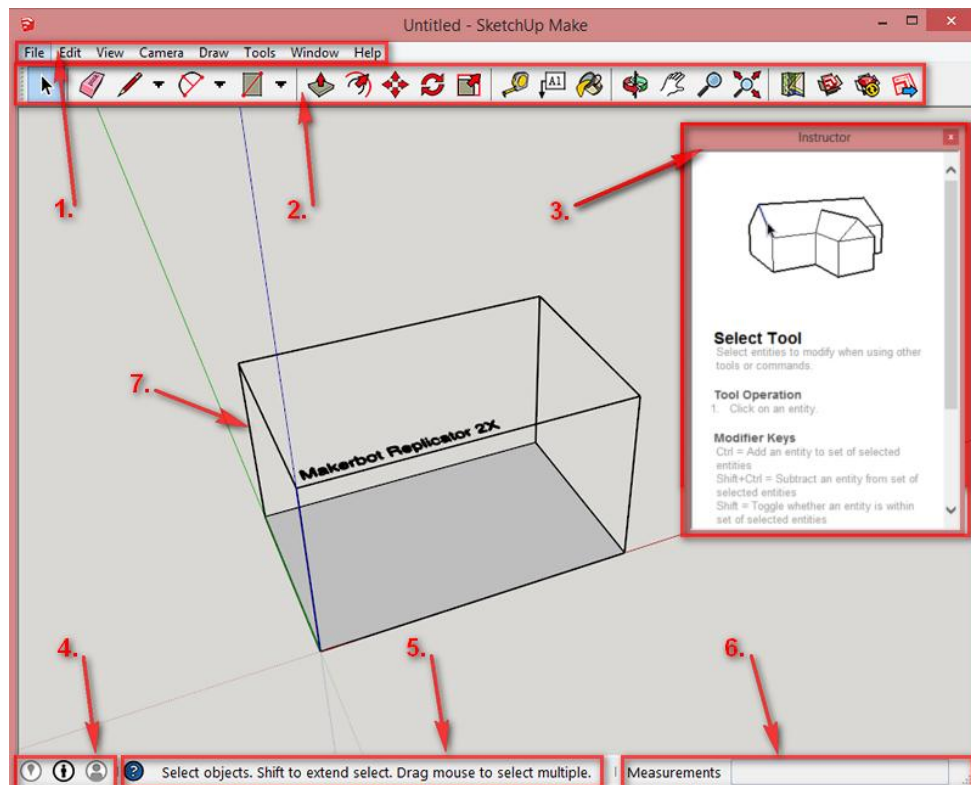
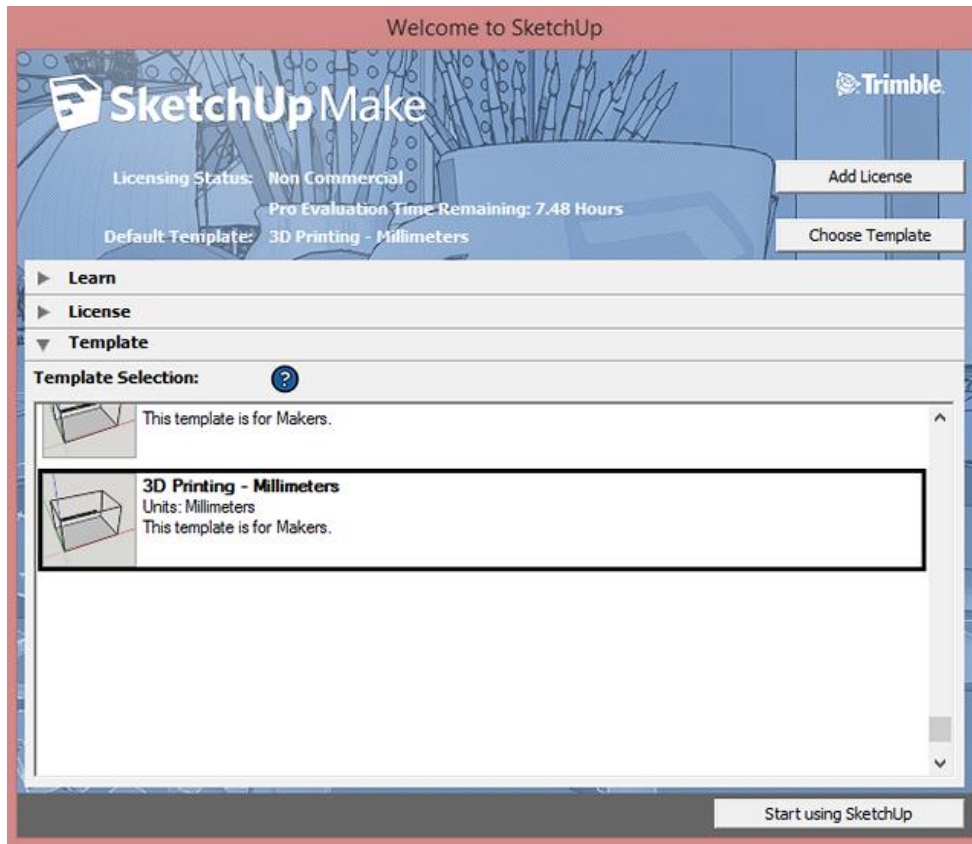
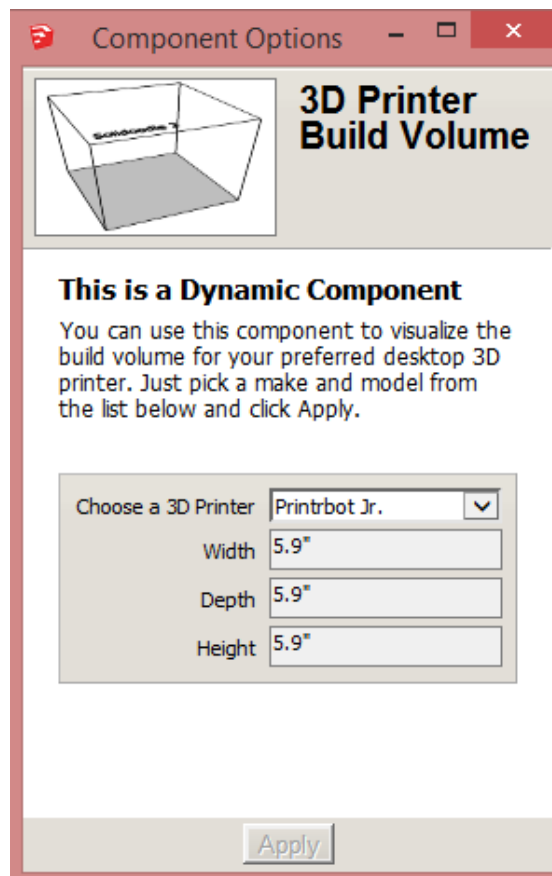
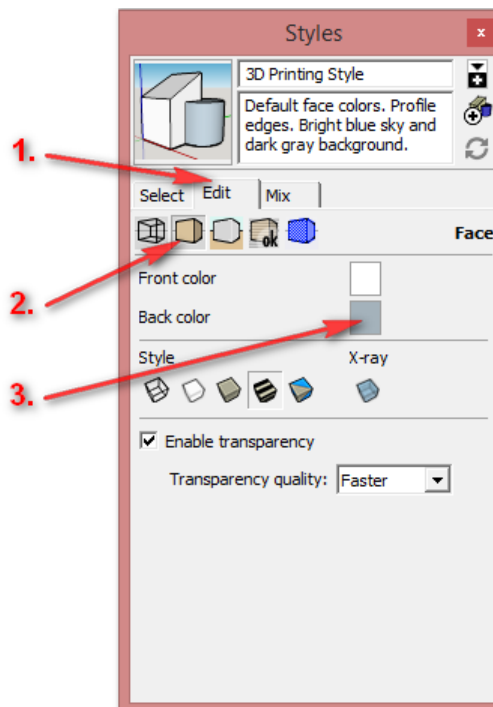


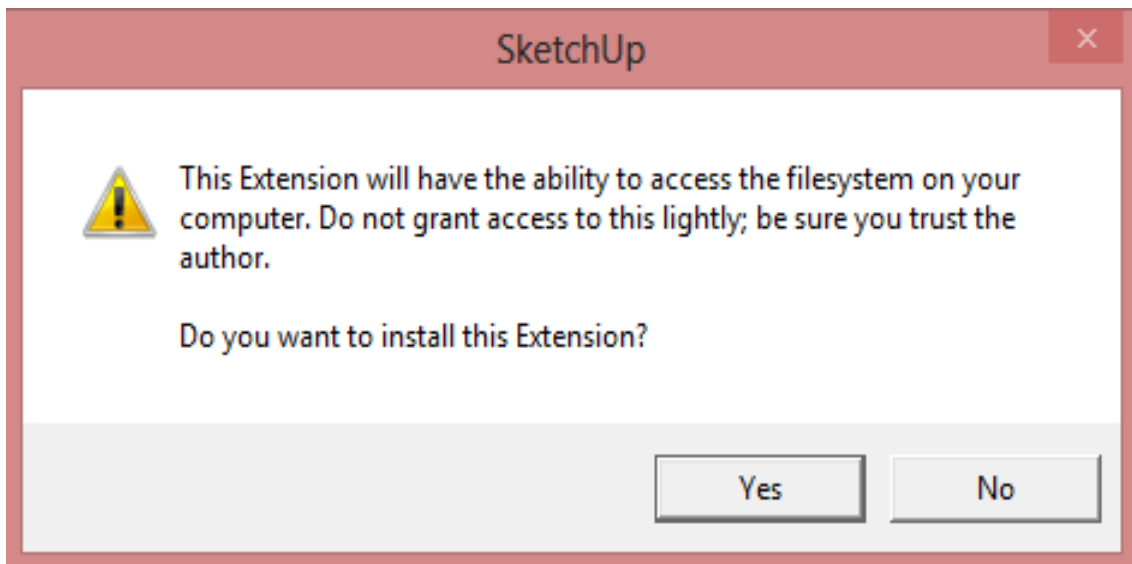
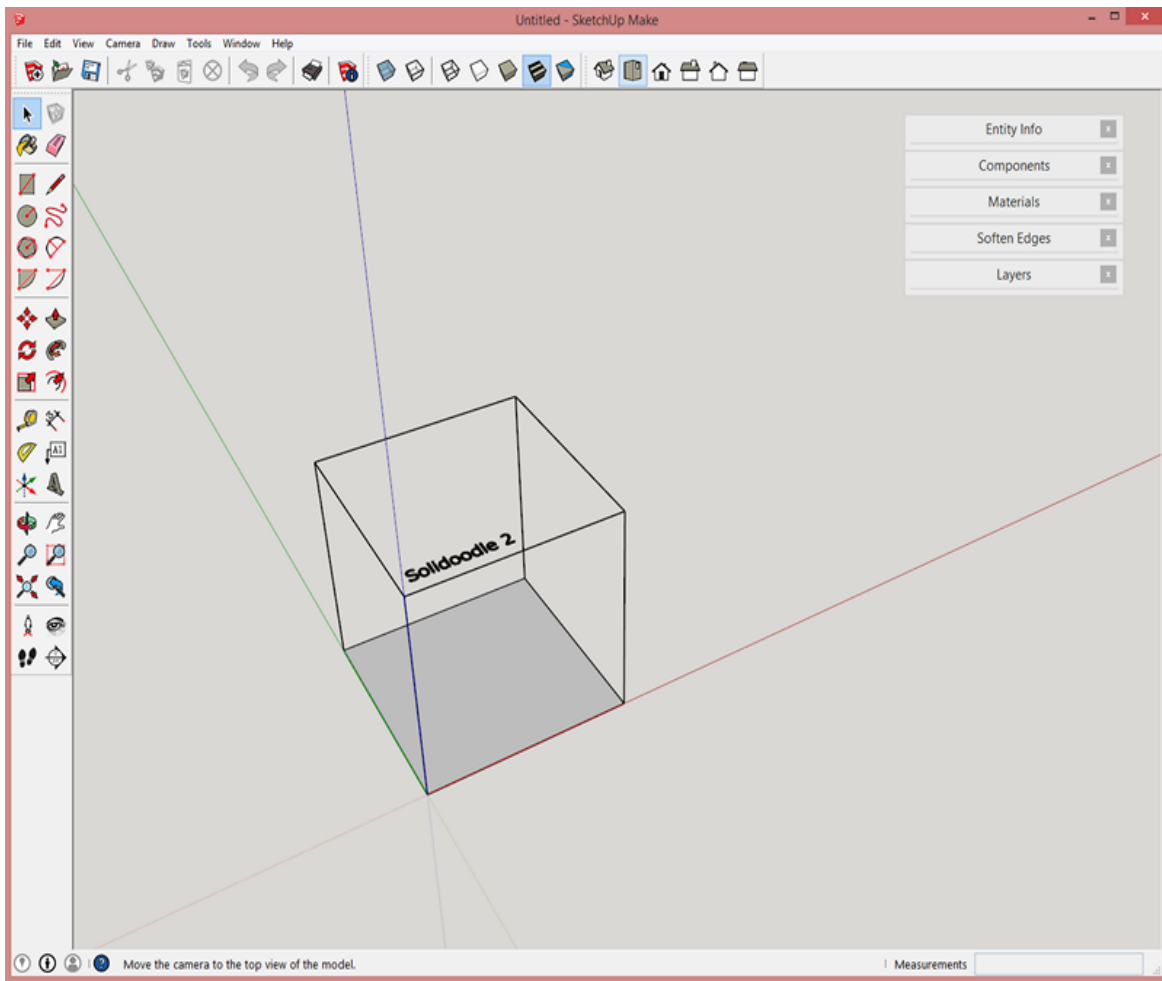
Chapter 1, Concepts Every 3D Printing Designer Needs to Know

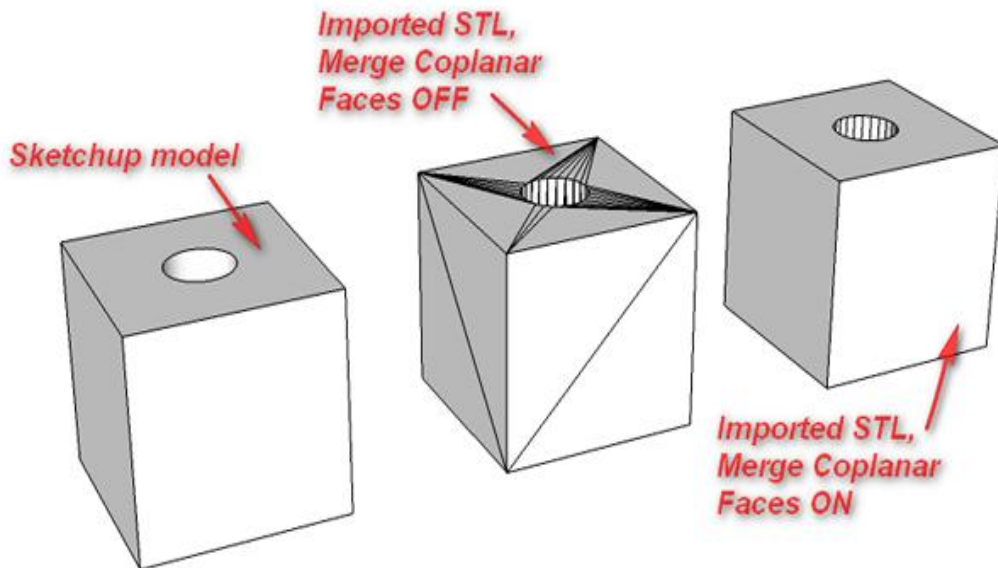
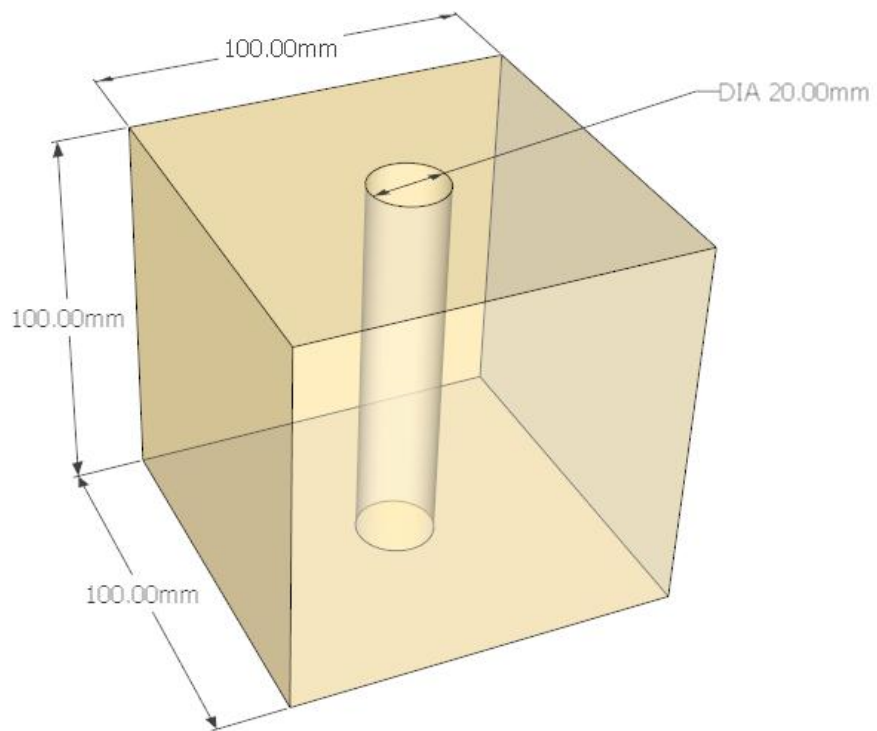


Chapter 2, Setting Up SketchUp for 3D Printing

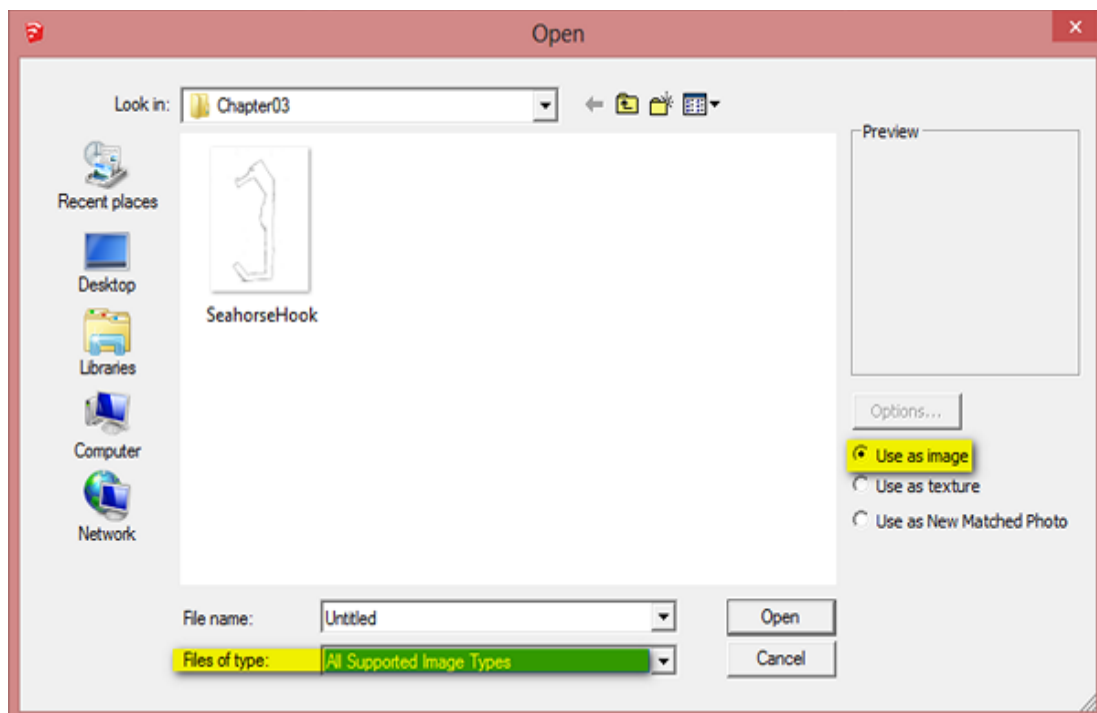
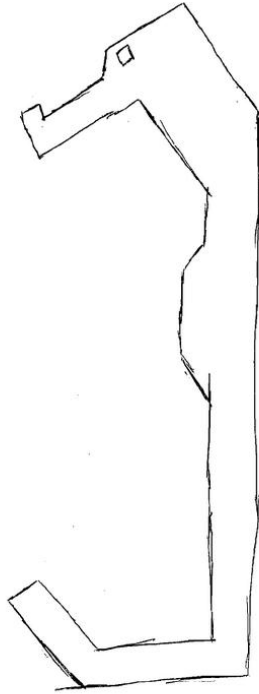


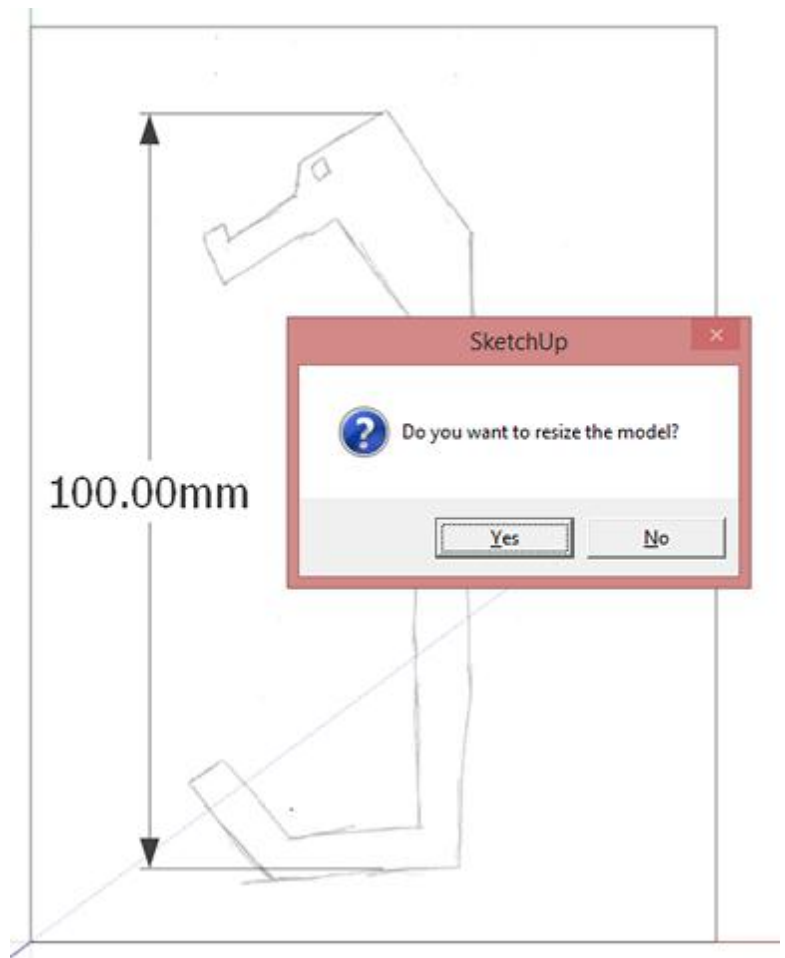
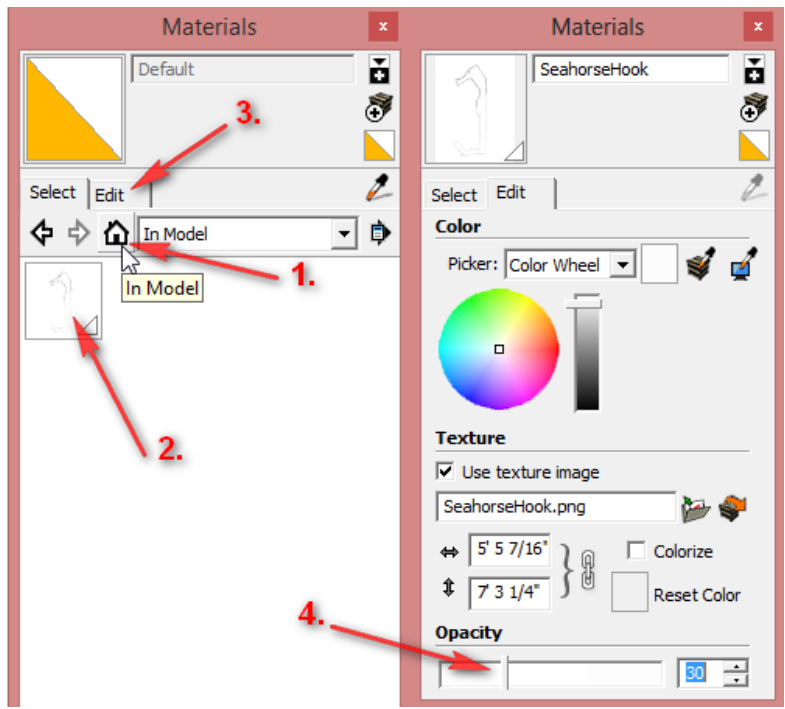


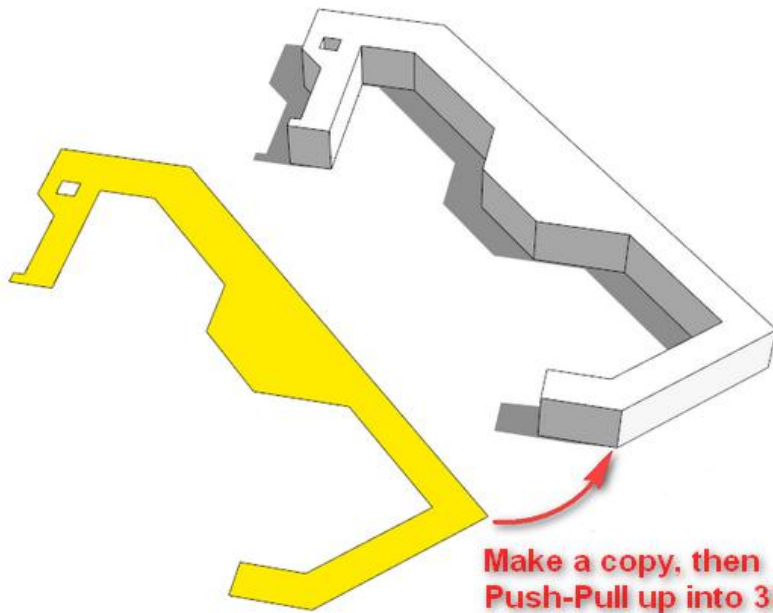
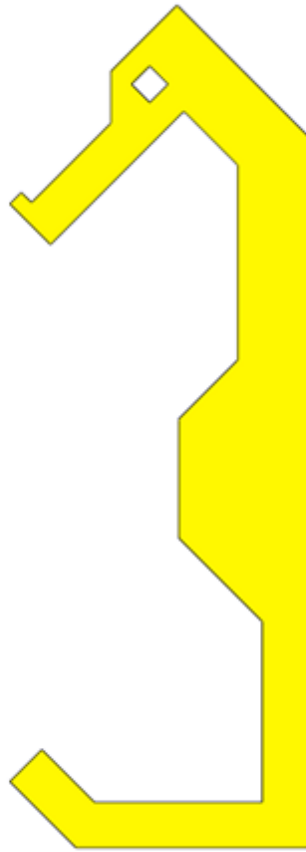




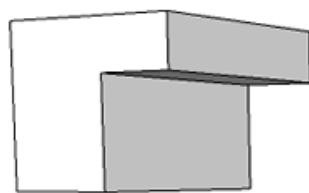
Chapter 3, From 2D Drawing to 3D Model



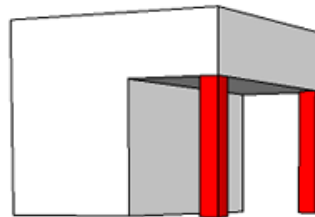




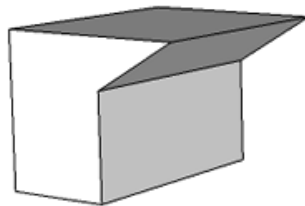
**Make a copy, then
Push-Pull up into 3D**



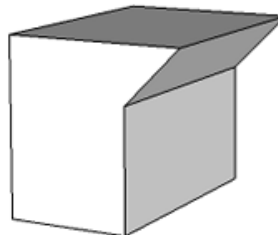
90° overhang
= BAD



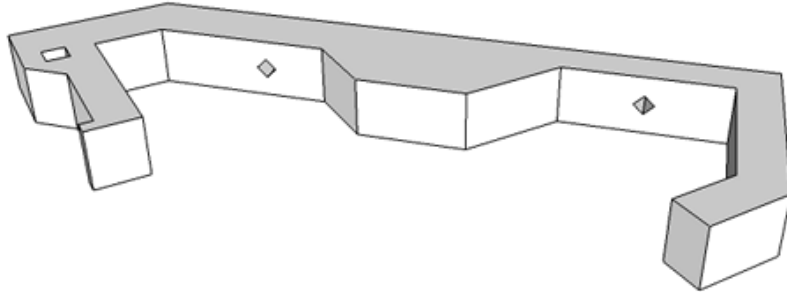
90° overhang with
supports = GOOD



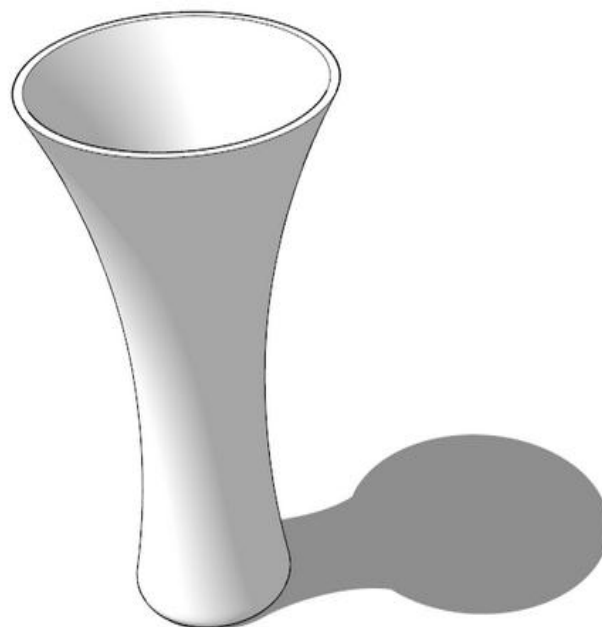
overhang >
60° = BAD,
likely to fail



45° overhang
will nearly
always work



Chapter 4, Understanding Model Resolution



Strong & Flexible Plastics

Material Overview

Design Guidelines

Min Wall Supported: 0.7mm

Min Wall Free: 0.7mm

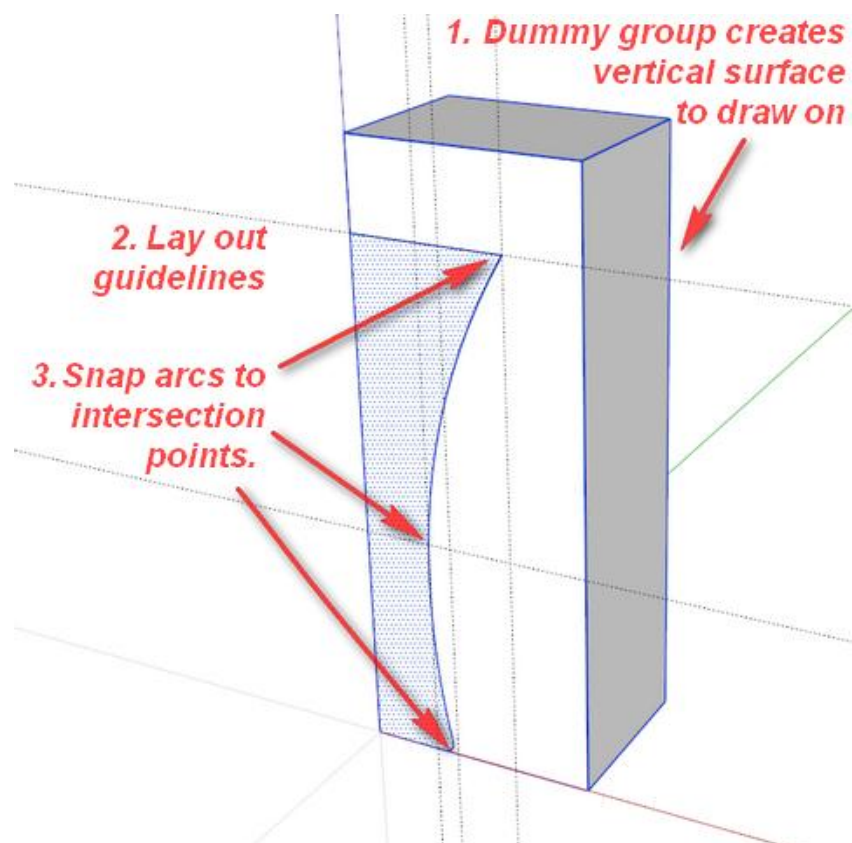
Min Wire Supported: 0.8mm (Unpolished) · 0.9mm (Polished & Dyed)

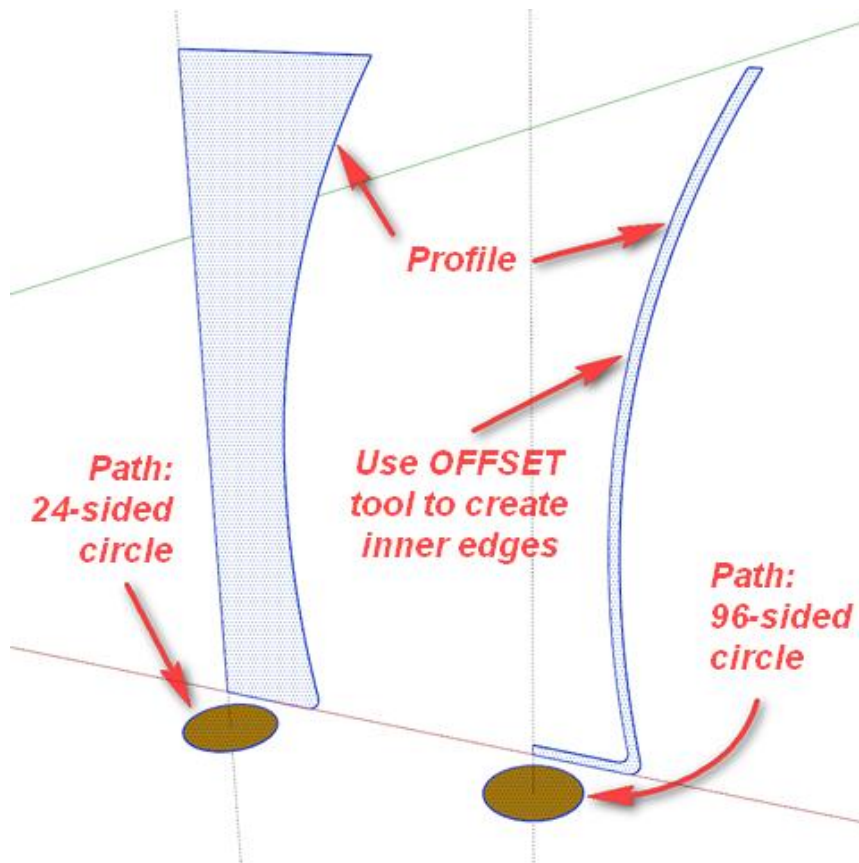
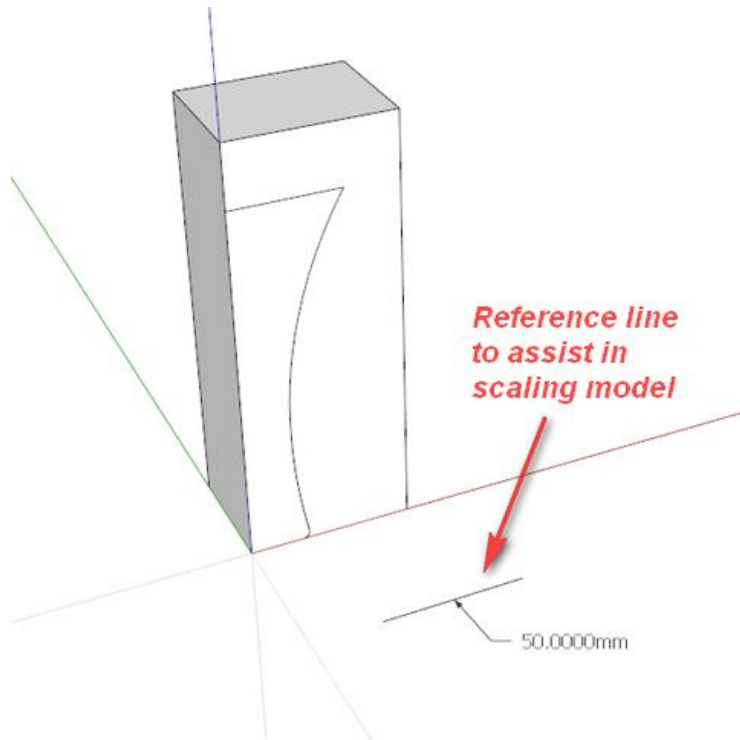
Min Wire Free: 1.0mm

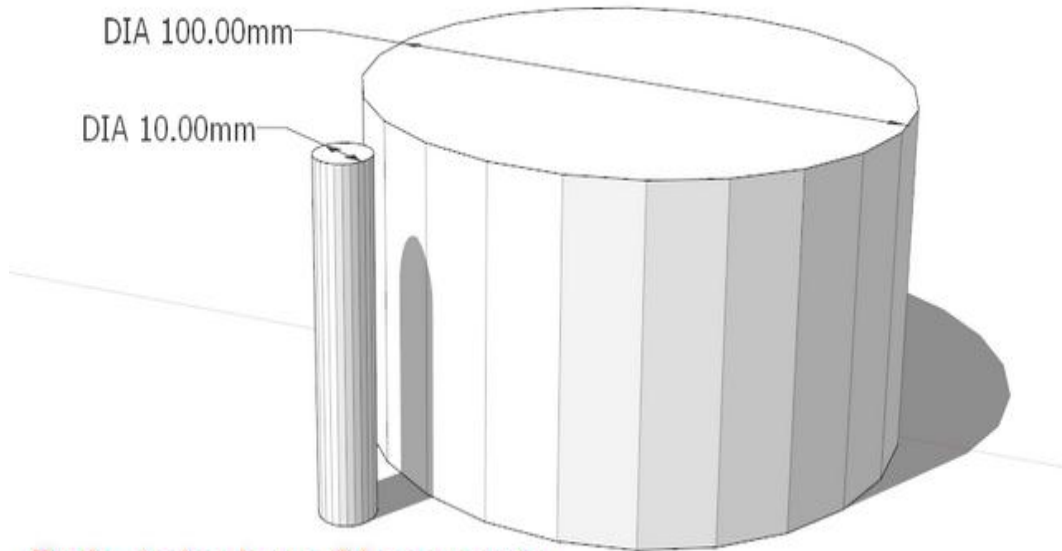
Min Embossed Detail: 0.2mm (0.5mm is recommended for readable text)

Min Engraved Detail: 0.2mm (0.5mm is recommended for readable text)

Screencap courtesy of www.shapeways.com

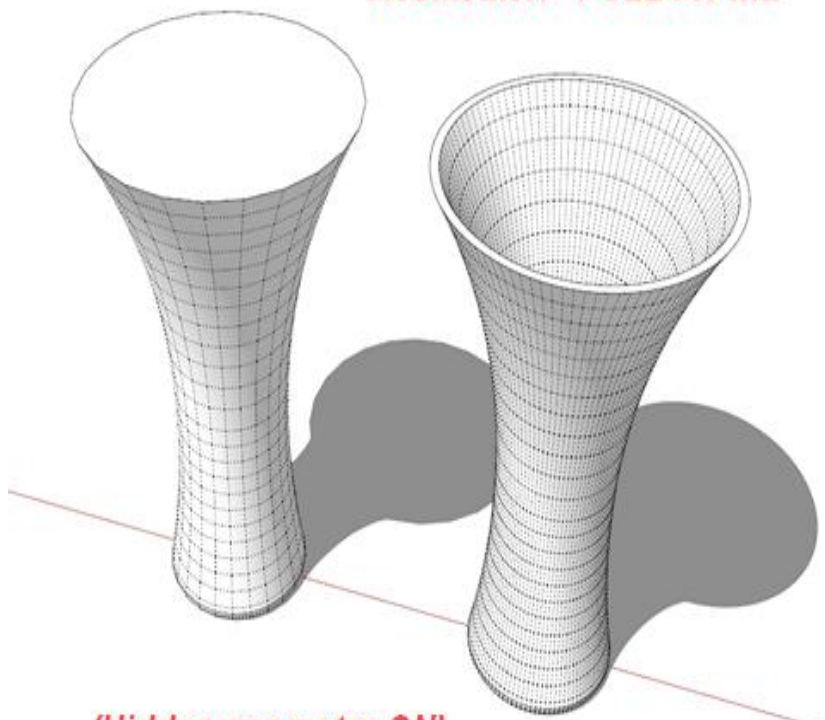




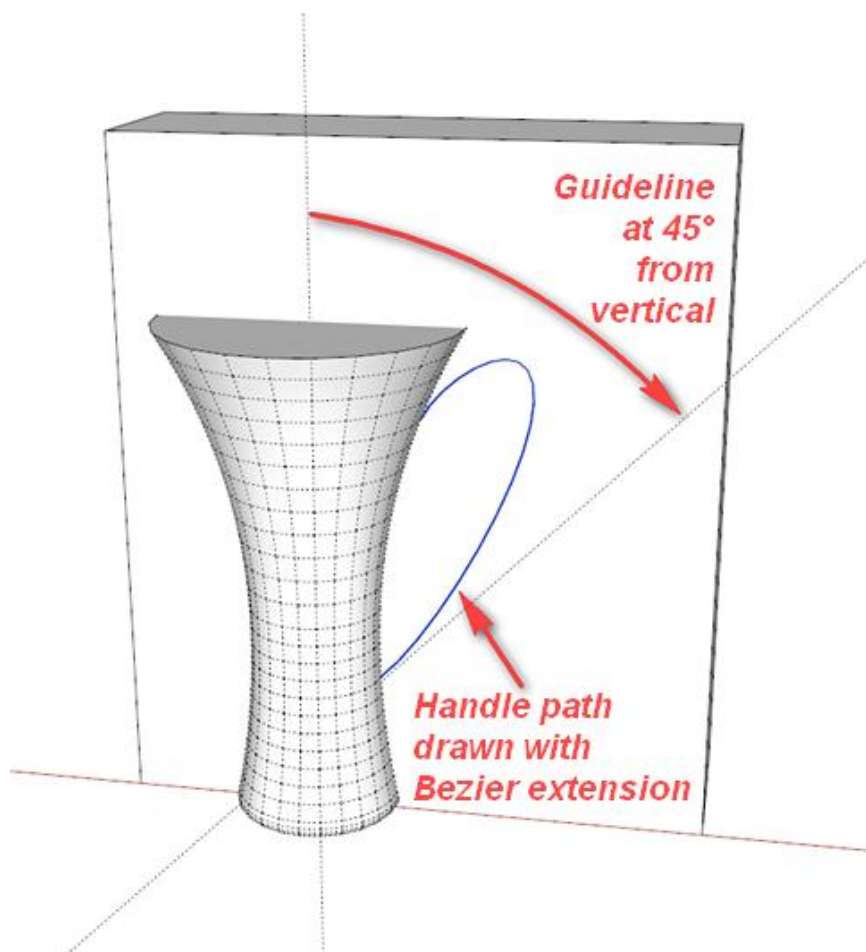
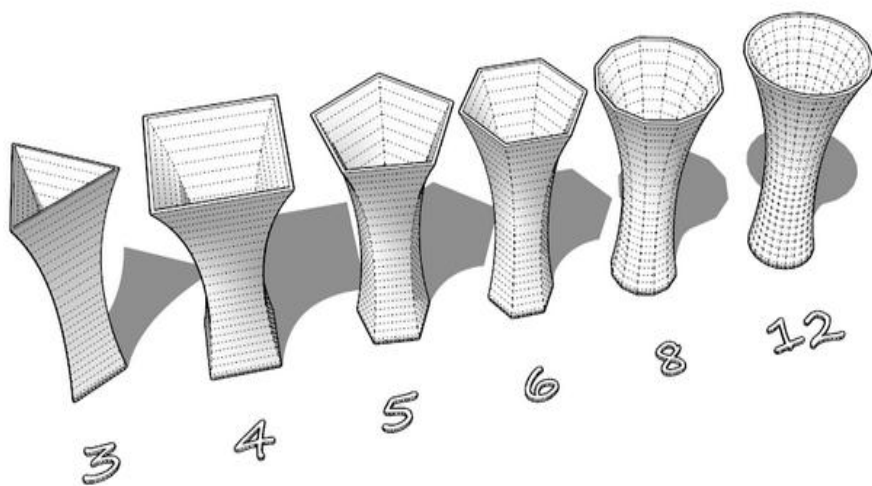


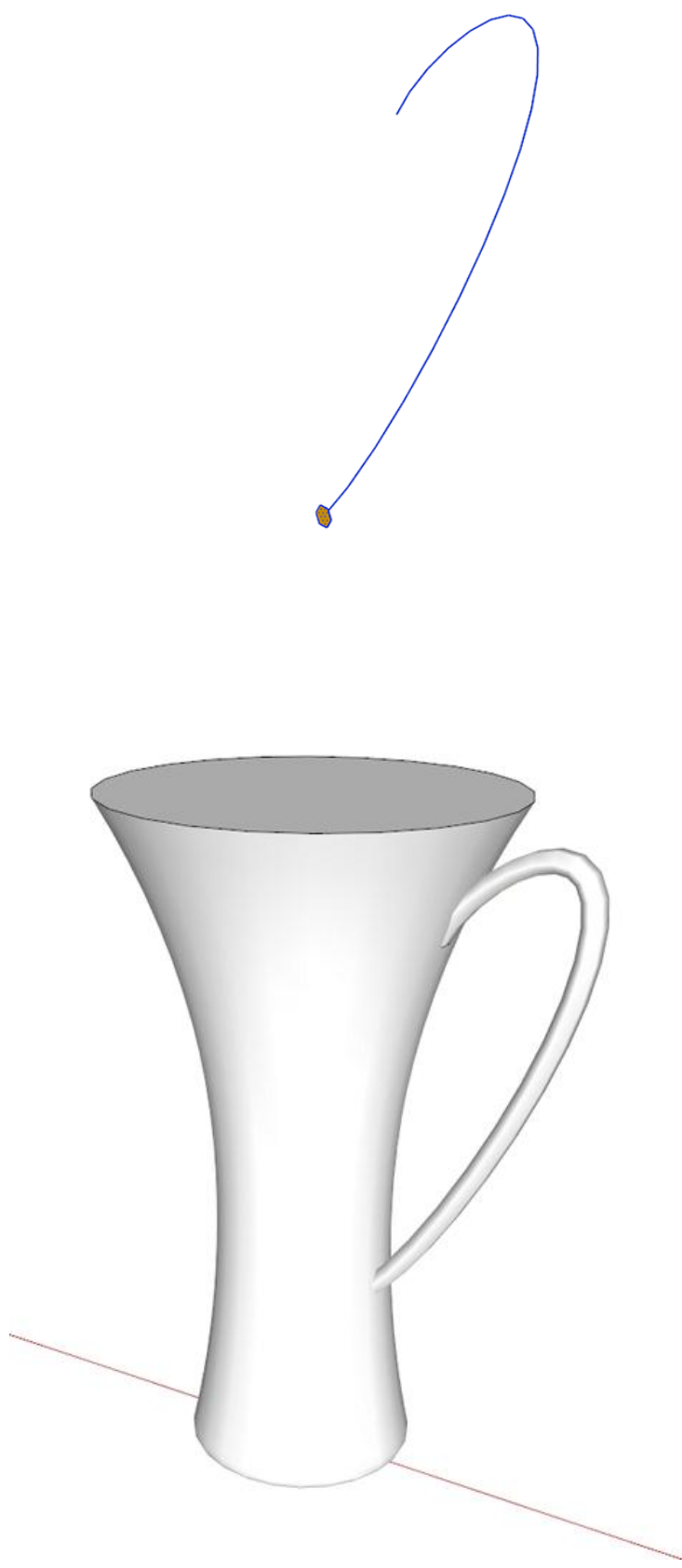
**Both circles have 24 segments.
A larger circle needs more facets to appear smooth.**

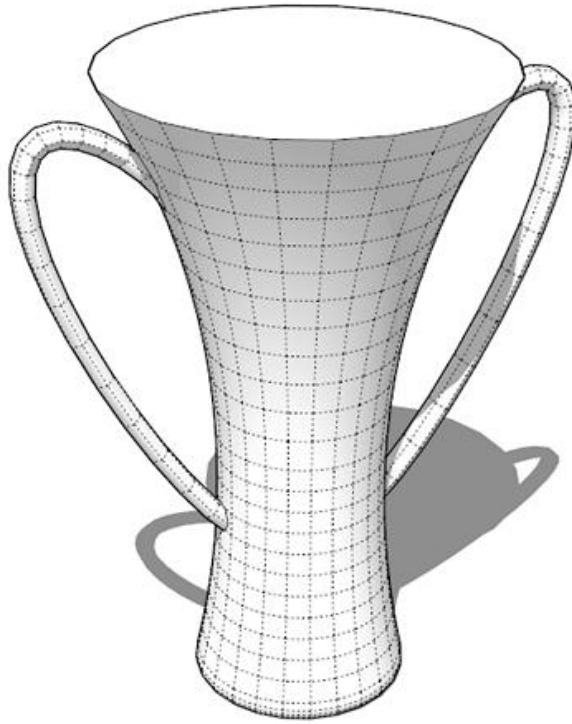
Result after "FOLLOW ME"



(Hidden geometry ON)





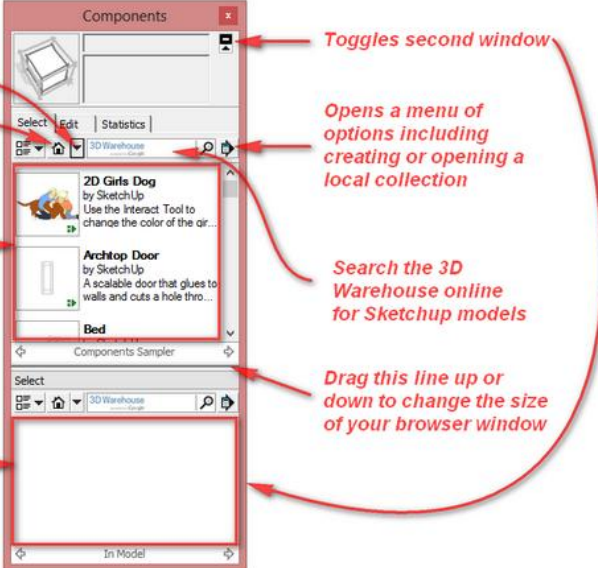


Ready to print!



Chapter 5, Using Existing Models

THE COMPONENTS BROWSER



The screenshot shows the SketchUp Components Browser window. It is divided into two panes: 'Components Sampler' at the top and 'In Model' at the bottom. The 'Components Sampler' pane contains a list of components with search filters and a search bar. The 'In Model' pane is currently empty. Red arrows point from text annotations to various UI elements in the browser.

Clicking the Down Arrow shows a list of collections

Clicking this "In Model" button shows all Components in the model

Listing of Components available for you to use (results change depending on search results, In Model, etc.) Drag and drop Components into your model.

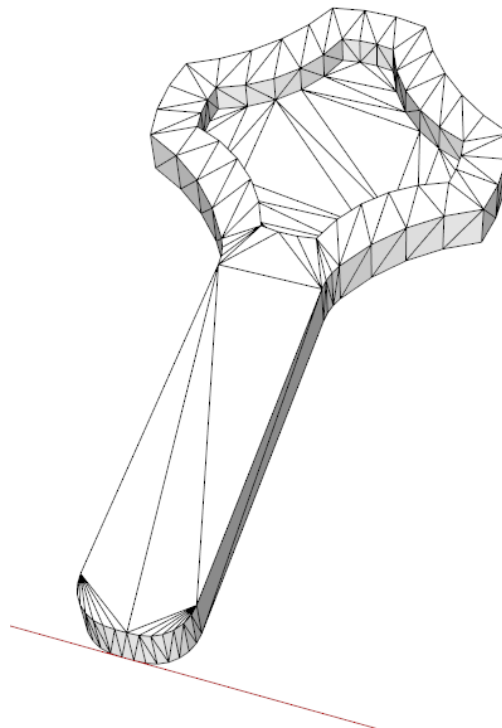
Drag Components from the top window to this window to save them to a local collection on your computer

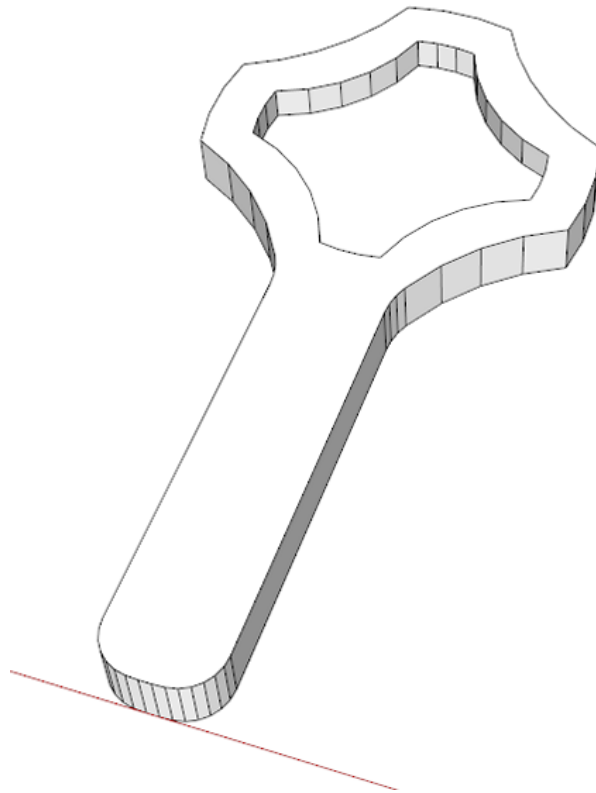
Toggles second window

Opens a menu of options including creating or opening a local collection

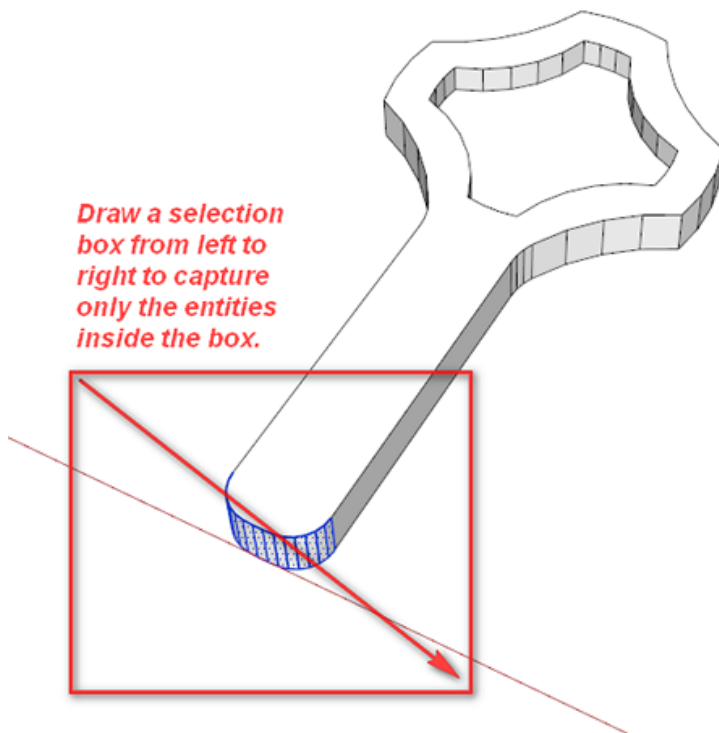
Search the 3D Warehouse online for Sketchup models

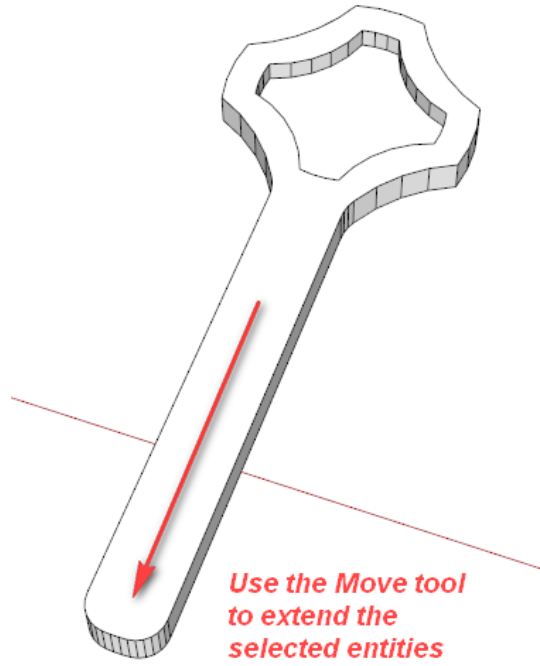
Drag this line up or down to change the size of your browser window



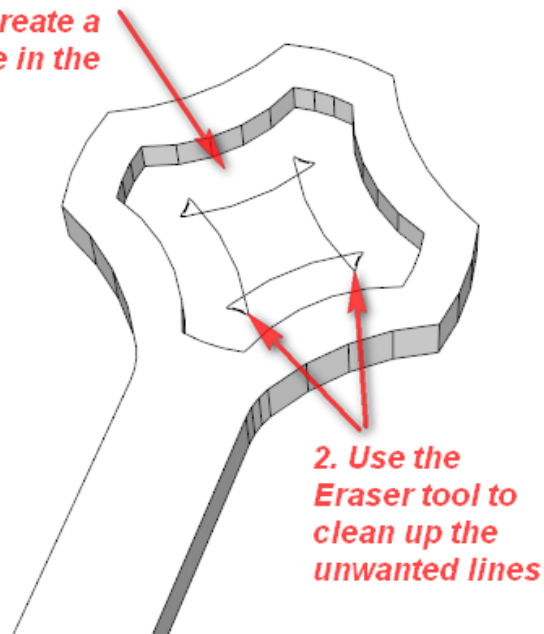


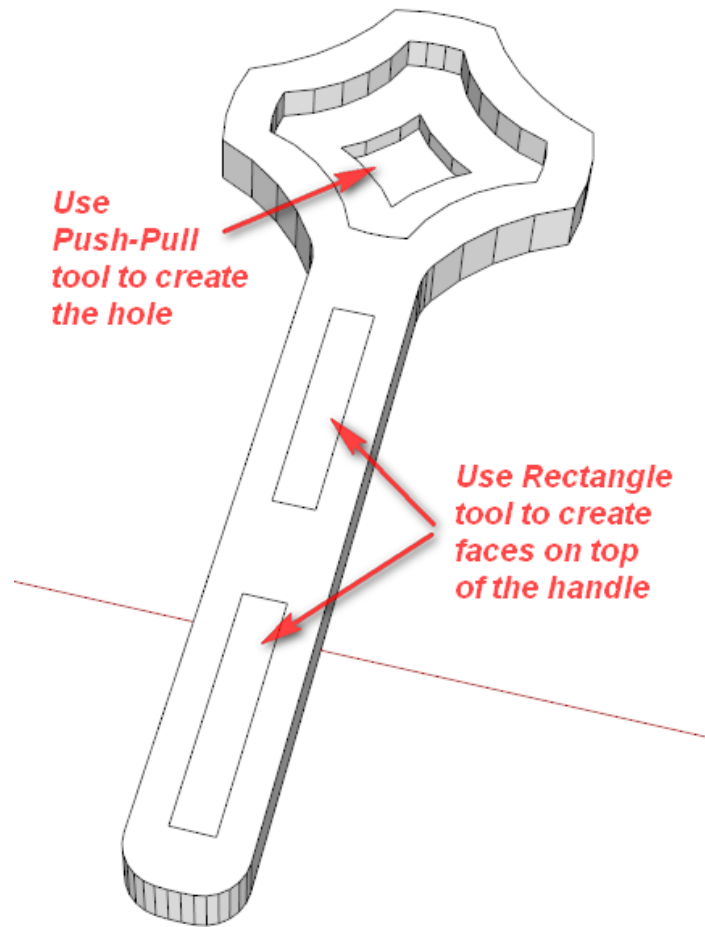
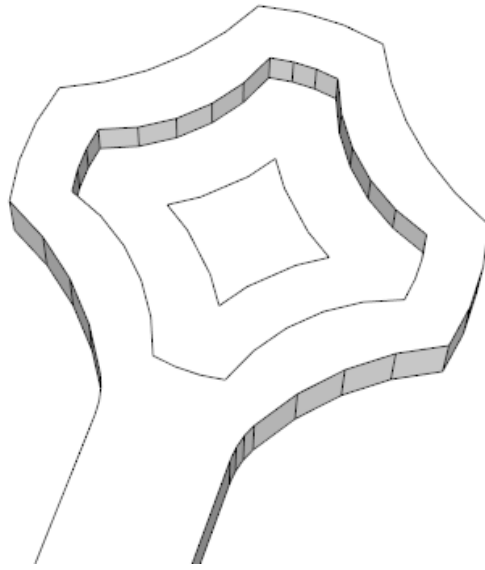
Draw a selection box from left to right to capture only the entities inside the box.

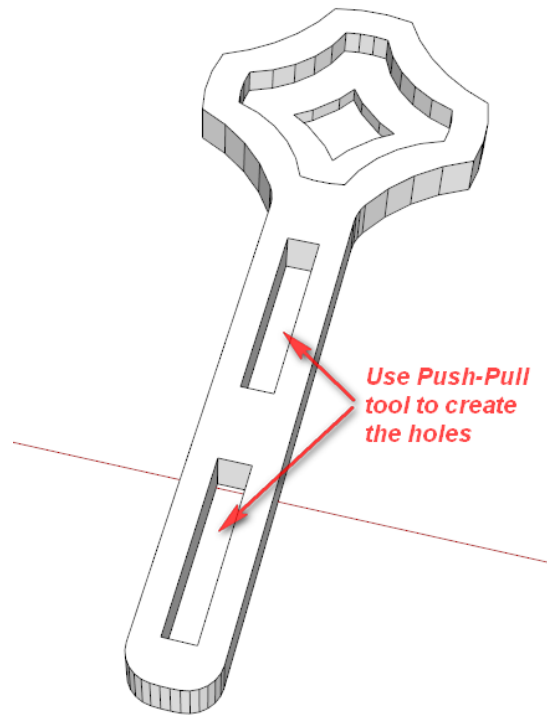




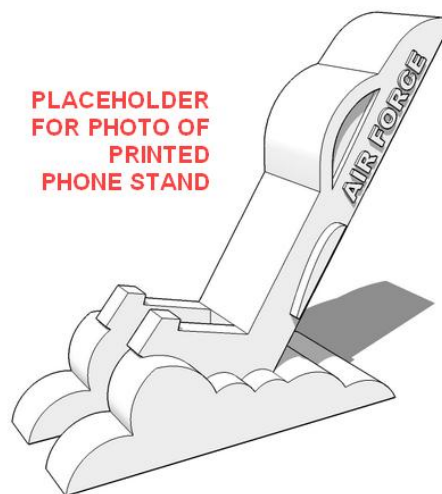
1. Use the Offset tool to create a new face in the center

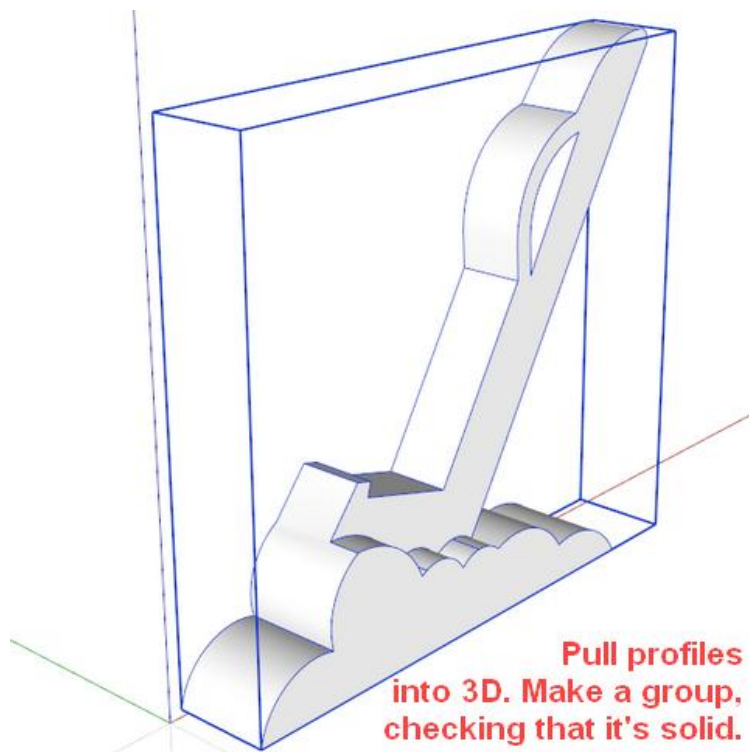
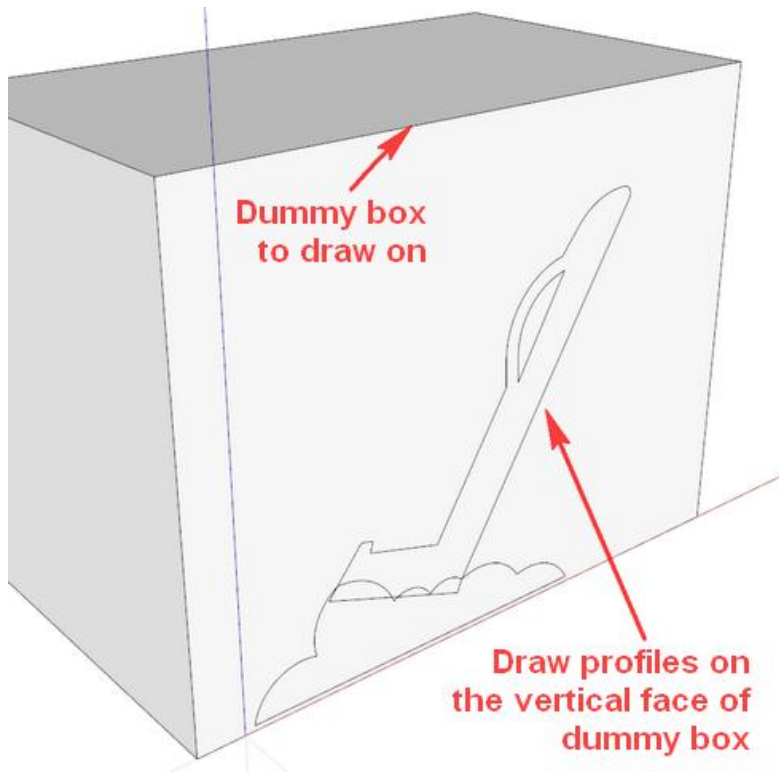


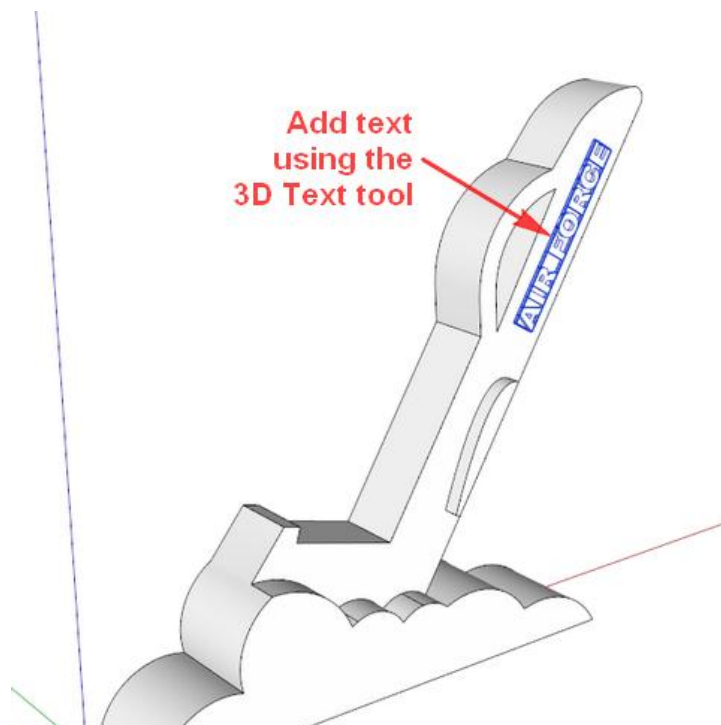
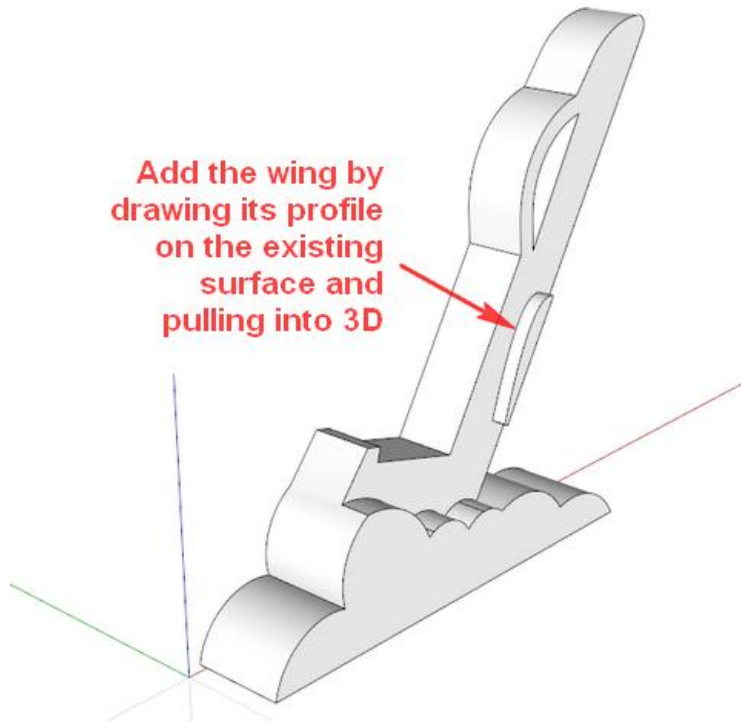


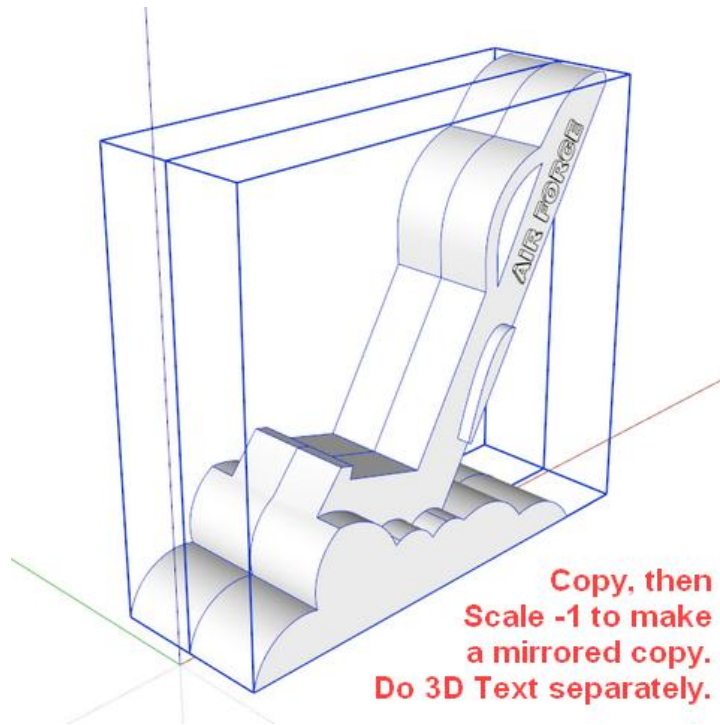


Chapter 6, Designing a Phone Cradle

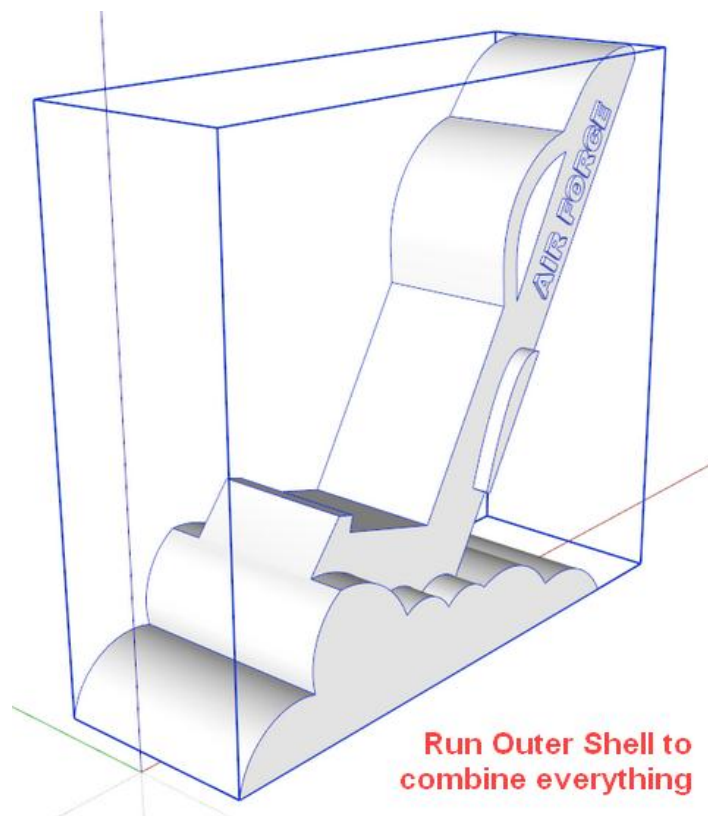






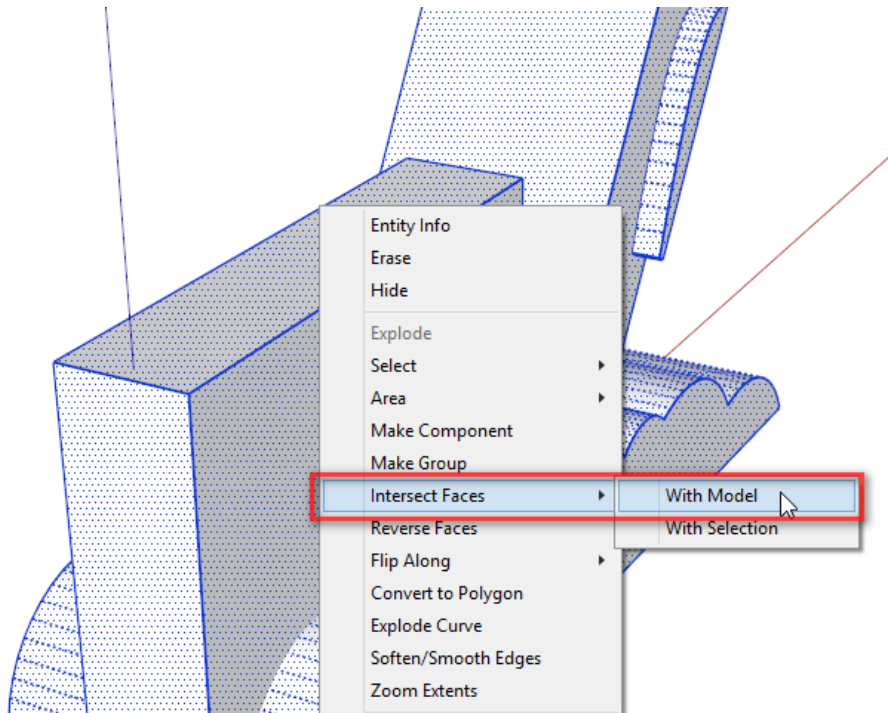
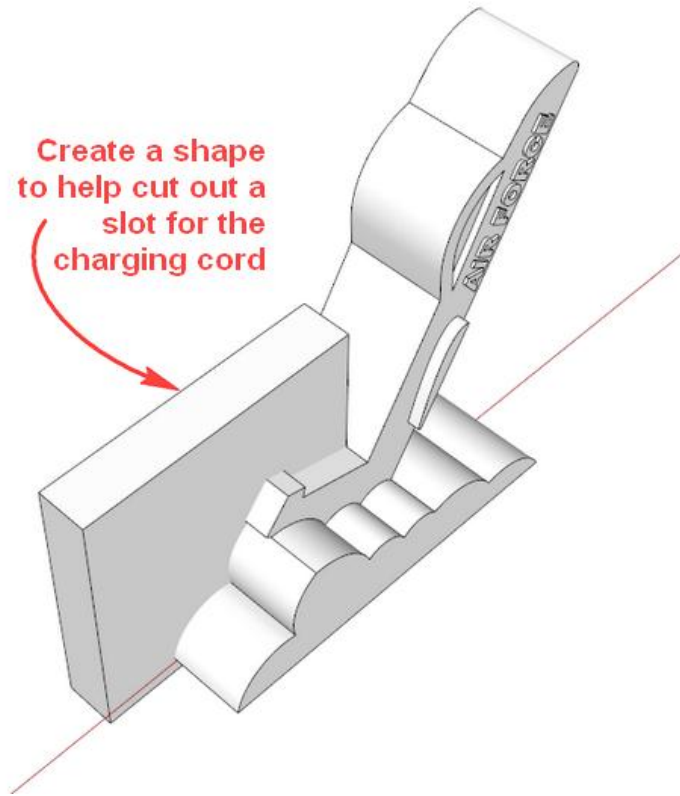


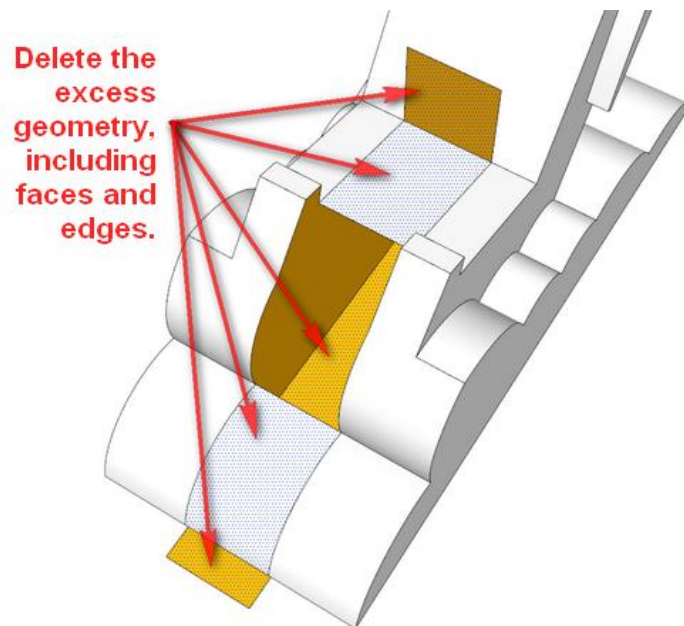
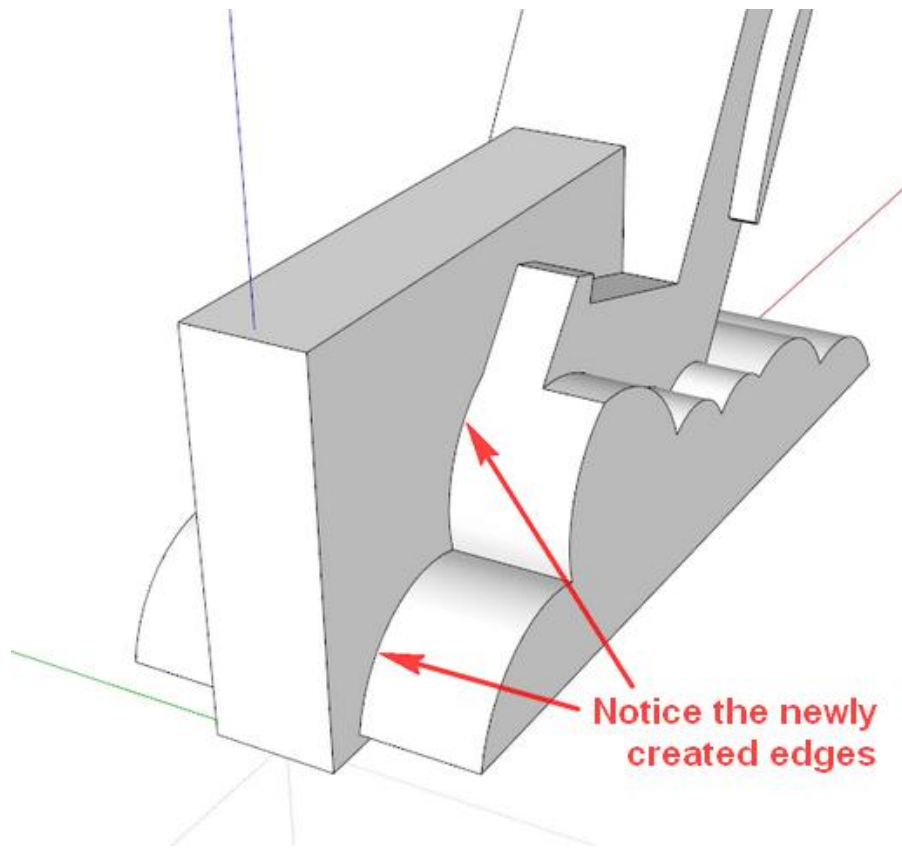
**Copy, then
Scale -1 to make
a mirrored copy.
Do 3D Text separately.**



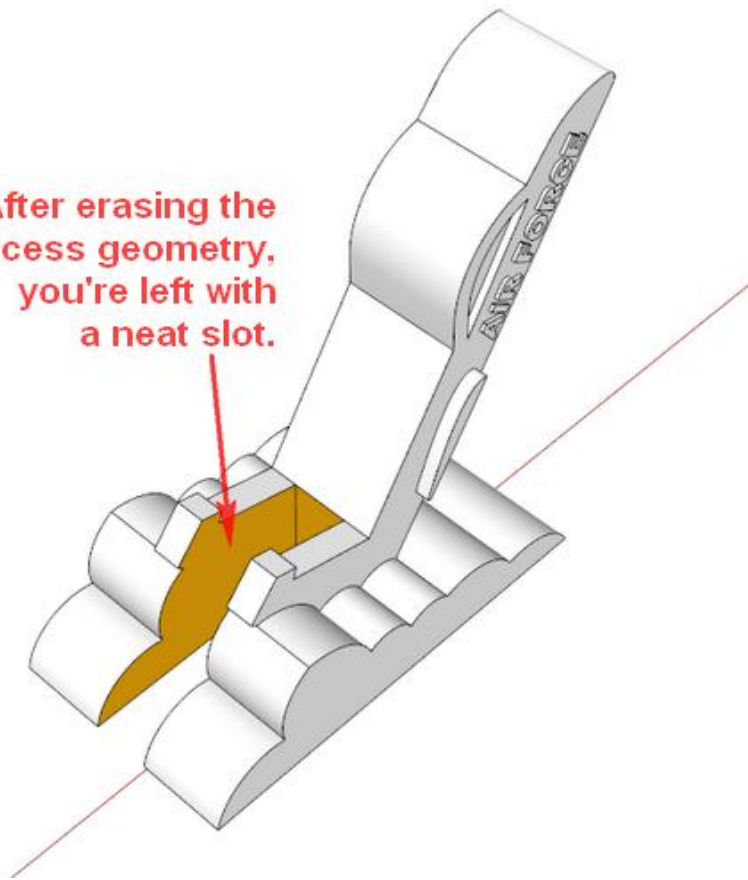
**Run Outer Shell to
combine everything**

Create a shape to help cut out a slot for the charging cord



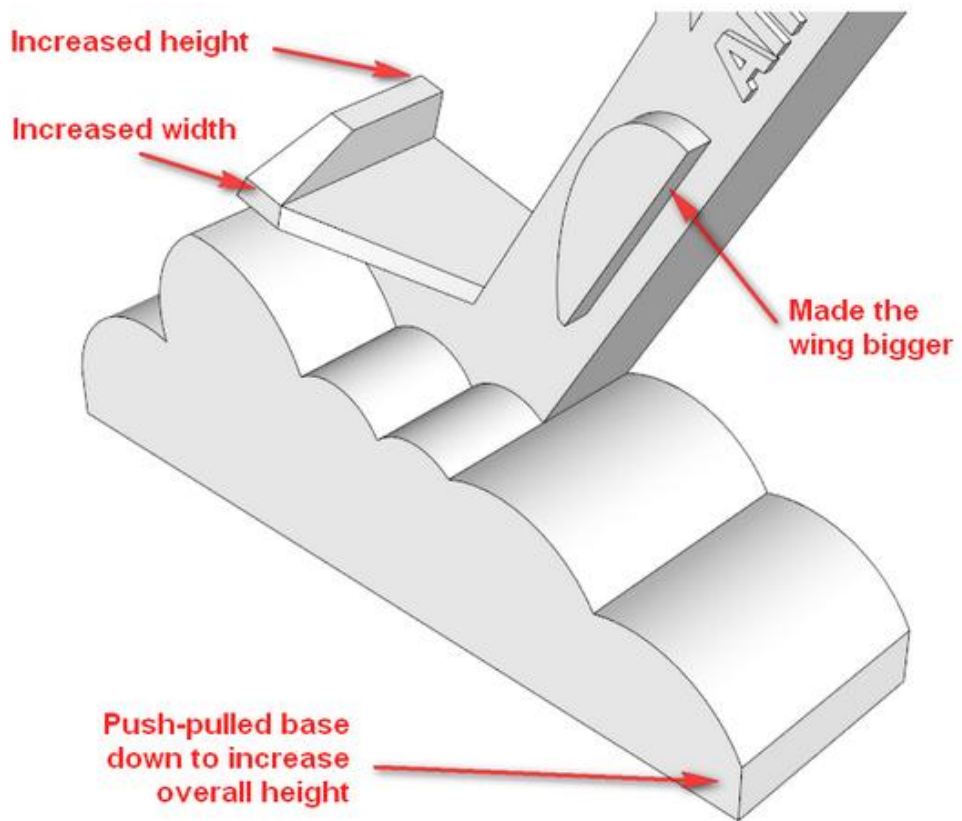


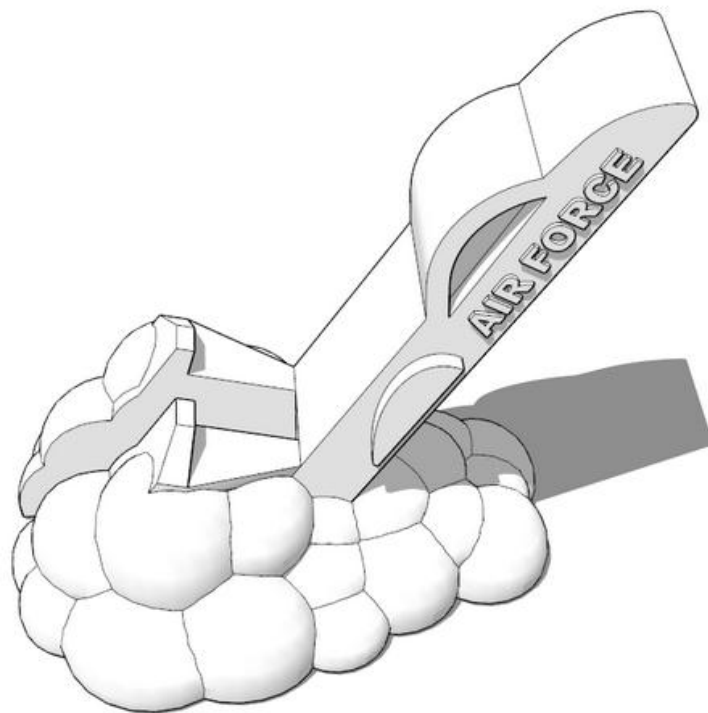
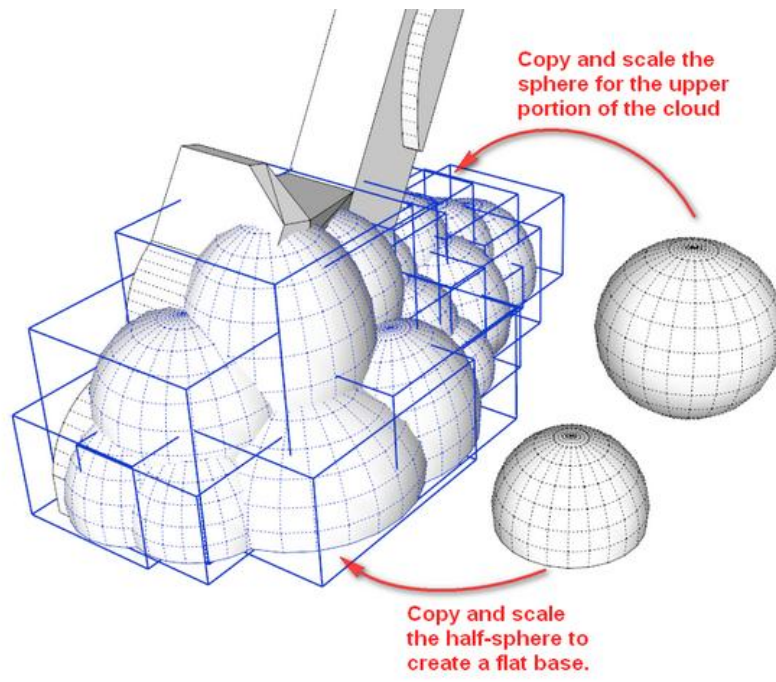
After erasing the
excess geometry,
you're left with
a neat slot.

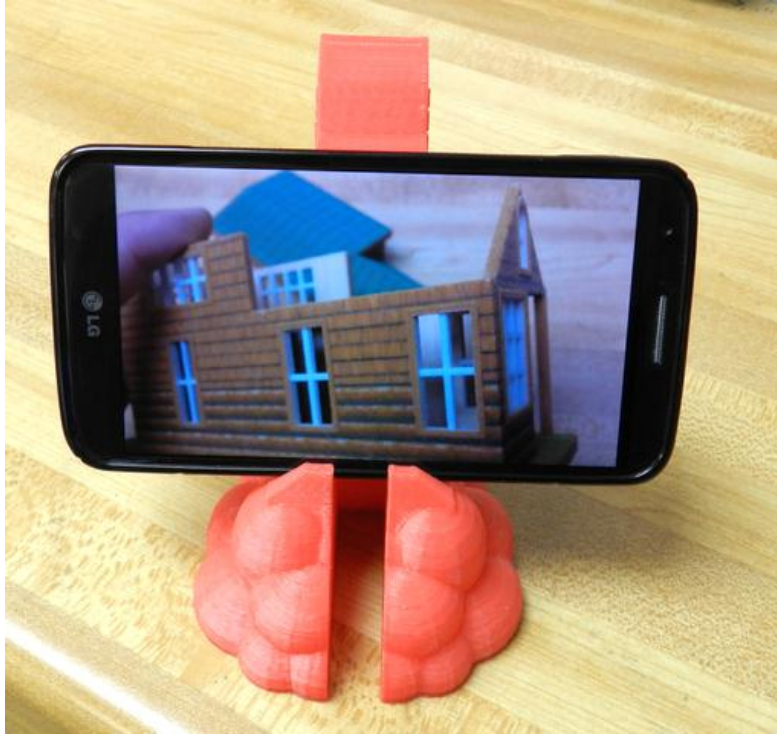


Orient the
faces and
you're done.
TAKEOFF!!



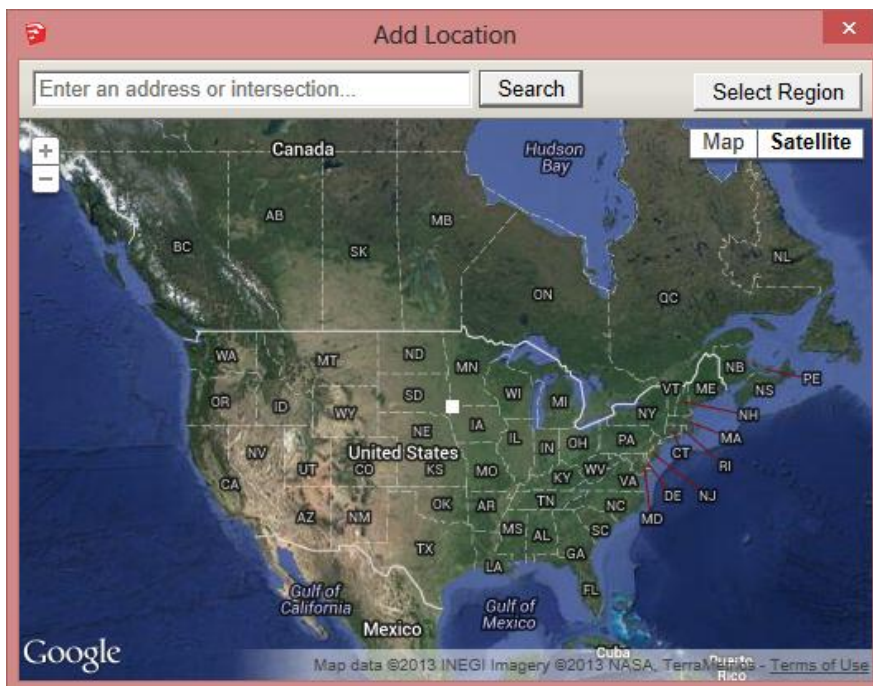


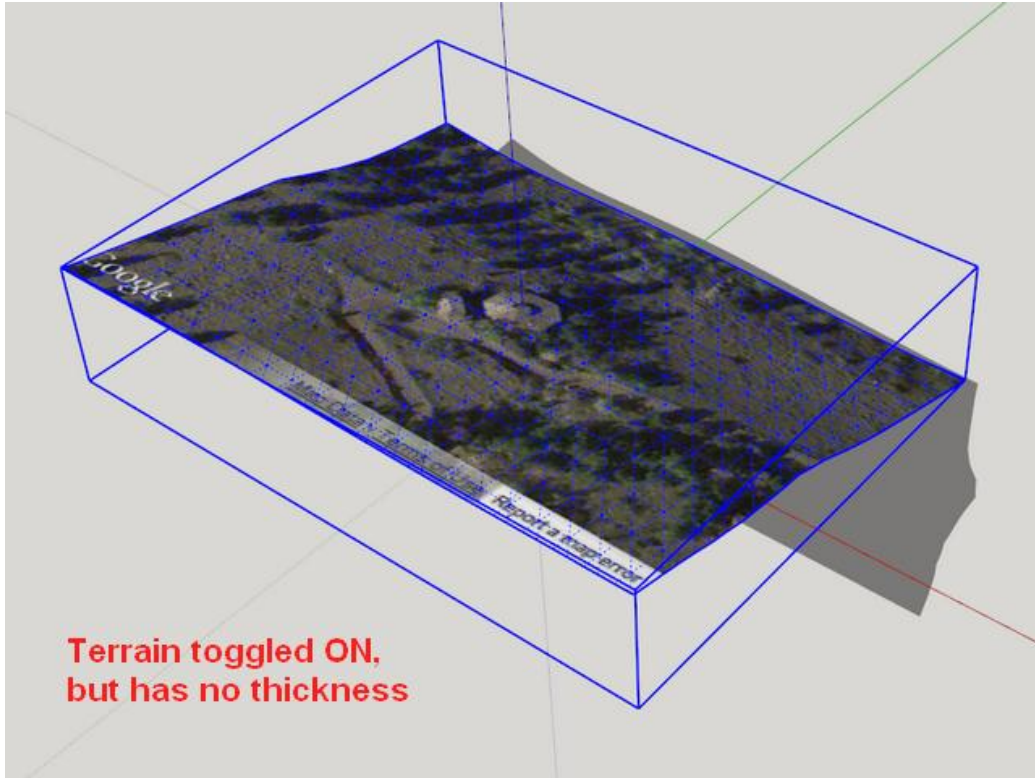




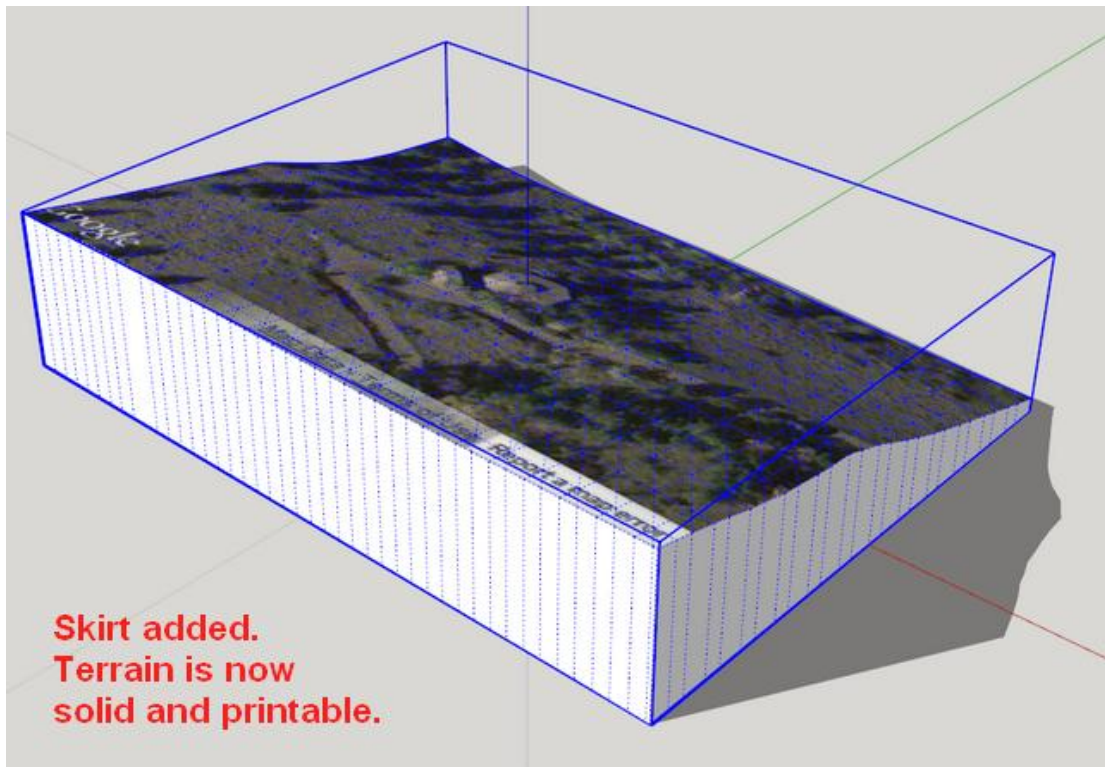


Chapter 7, Importing Terrain and Printing in Color

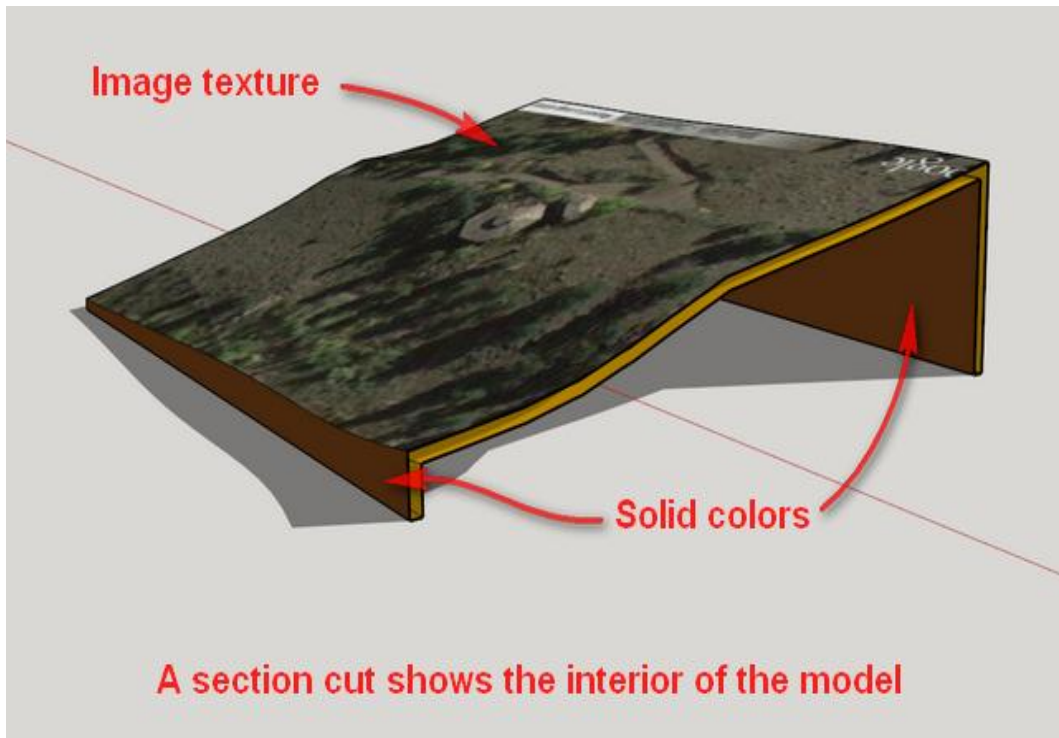
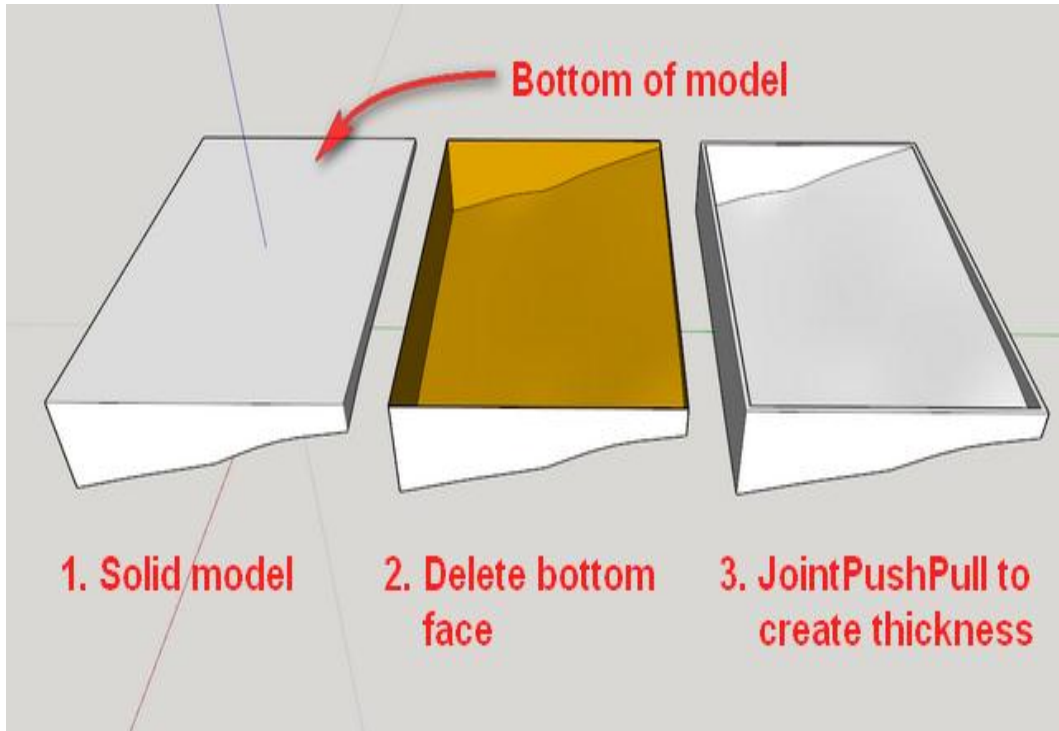


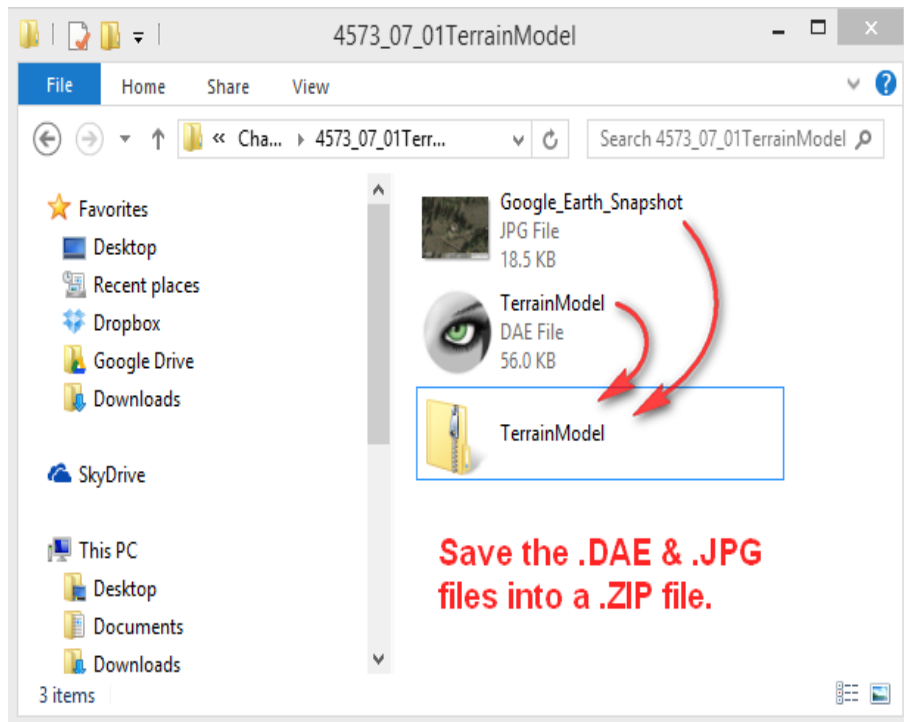


**Terrain toggled ON,
but has no thickness**



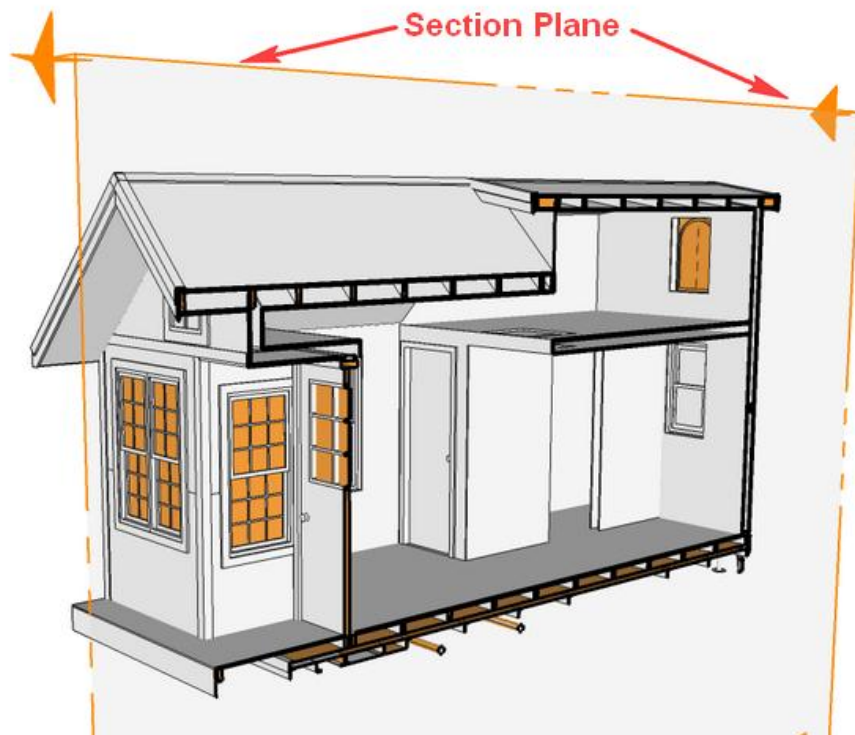
**Skirt added.
Terrain is now
solid and printable.**

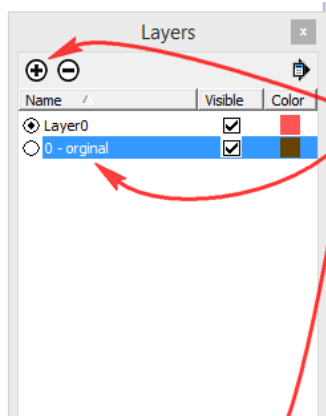




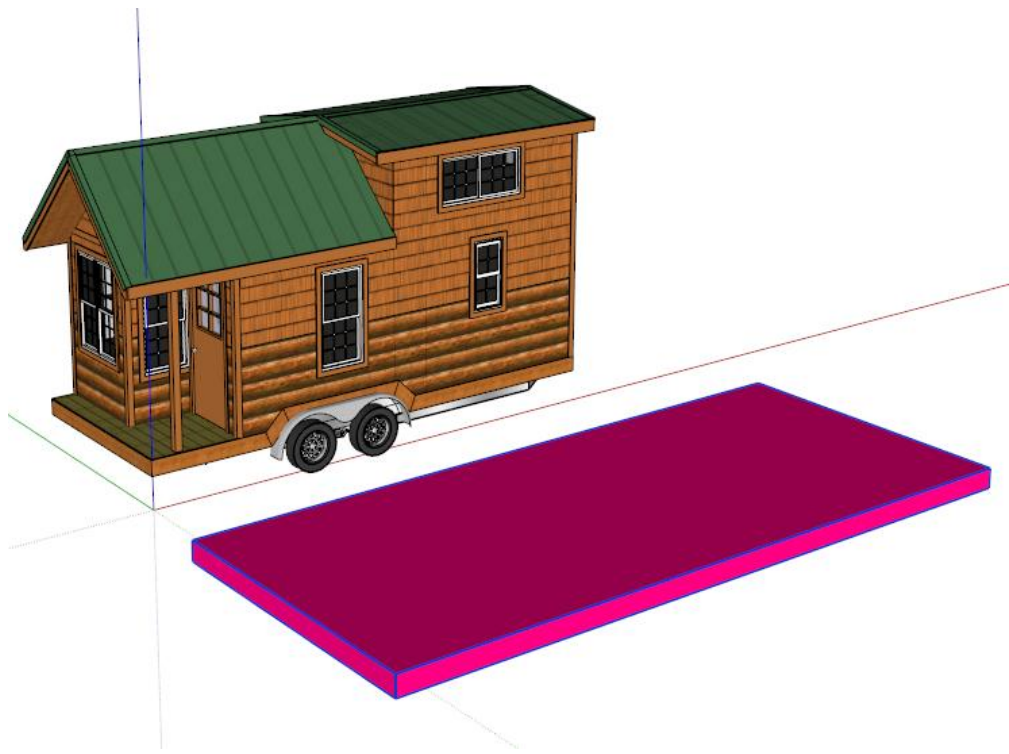
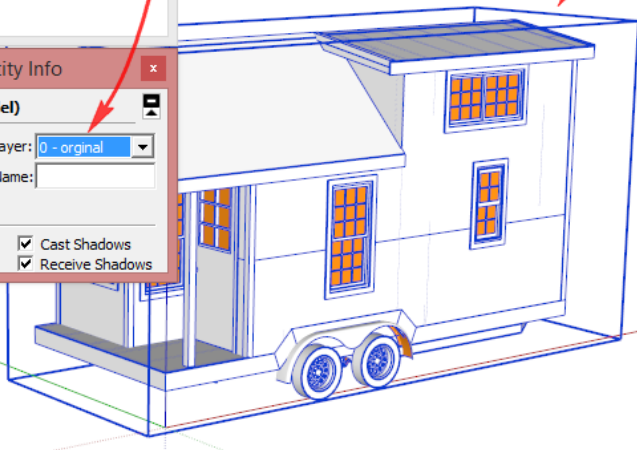
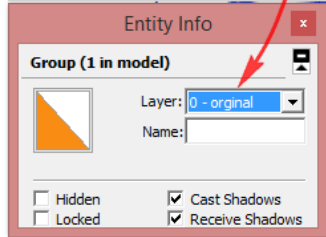
Chapter 8, Modeling Architecture for 3D Printing

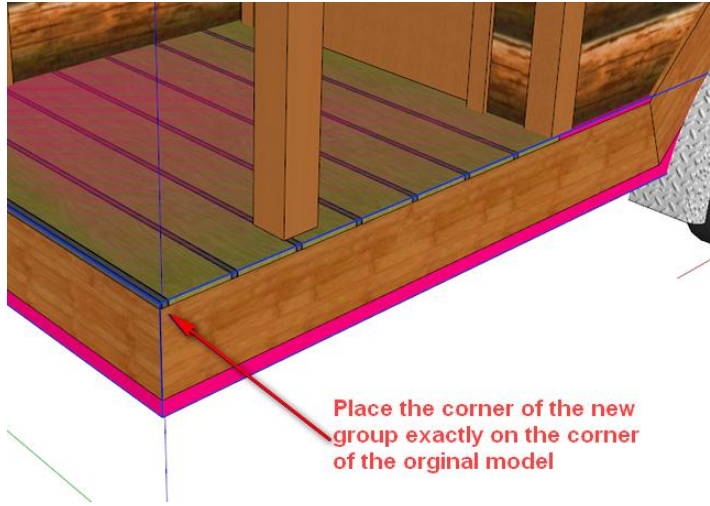




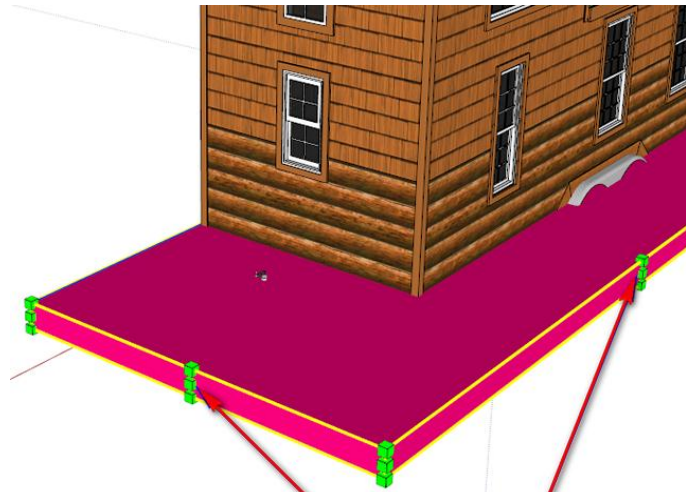


1. Group the model
2. Add a layer
3. Set the group to the new layer in the Entity Info window
4. Use the 'Visible' column in the Layers window to hide and show the group

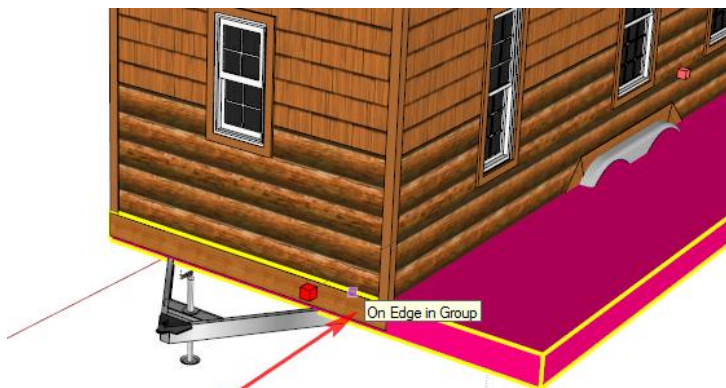




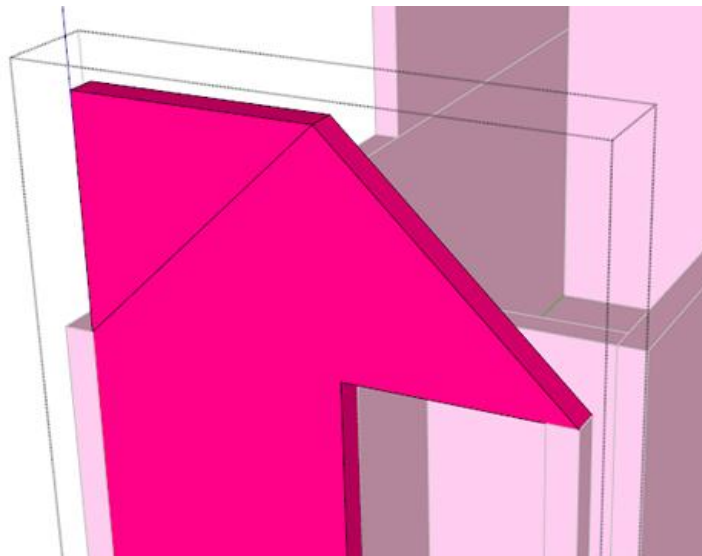
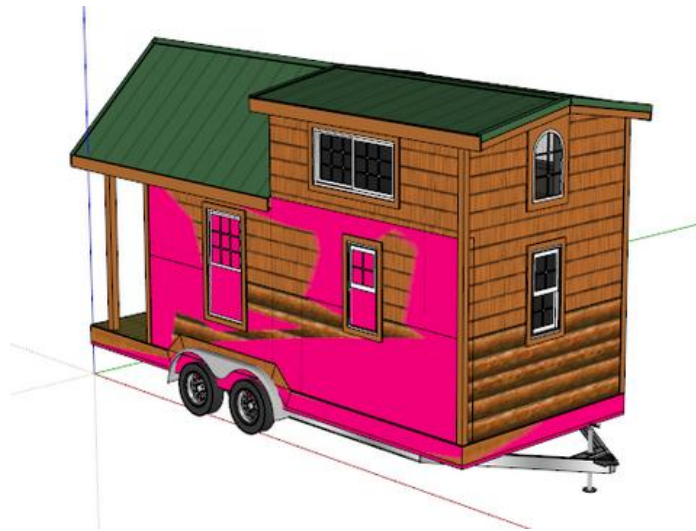
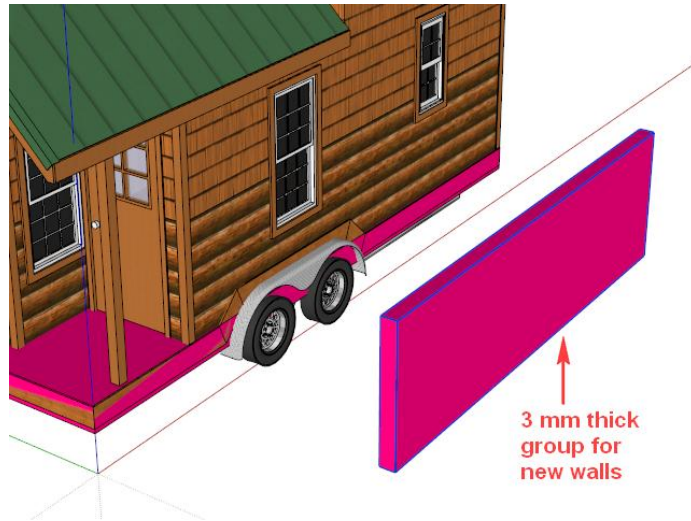
Place the corner of the new group exactly on the corner of the original model

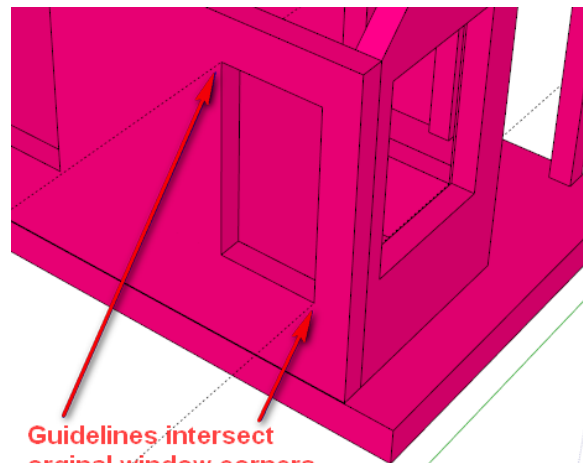
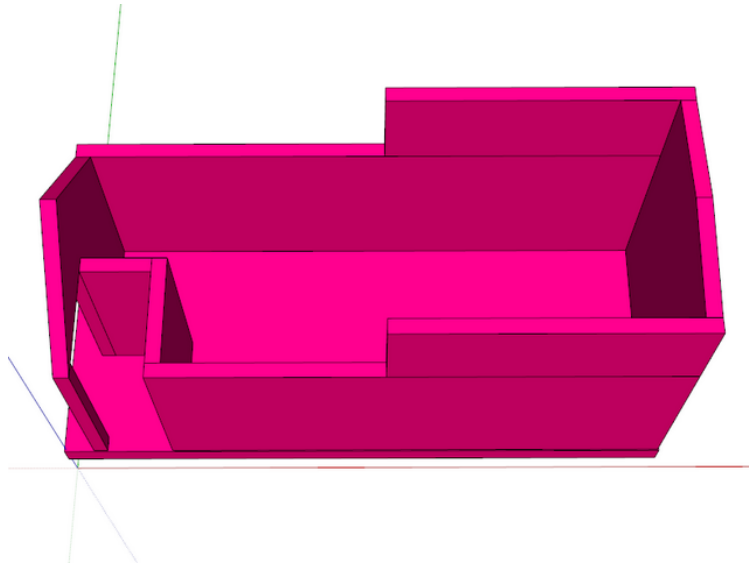


Scale along one axis at a time using the center grip

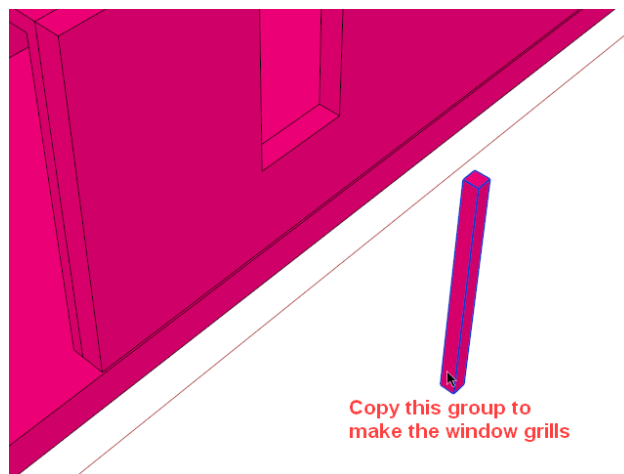


Use inferencing to precisely scale the group

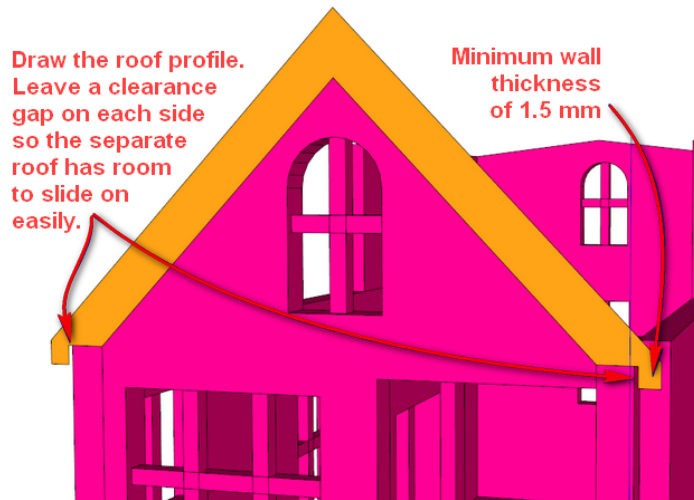
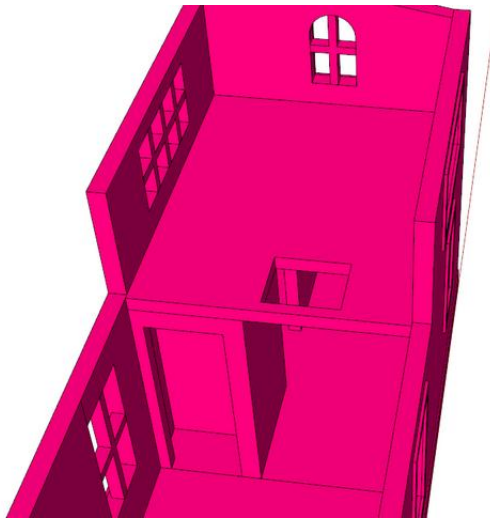
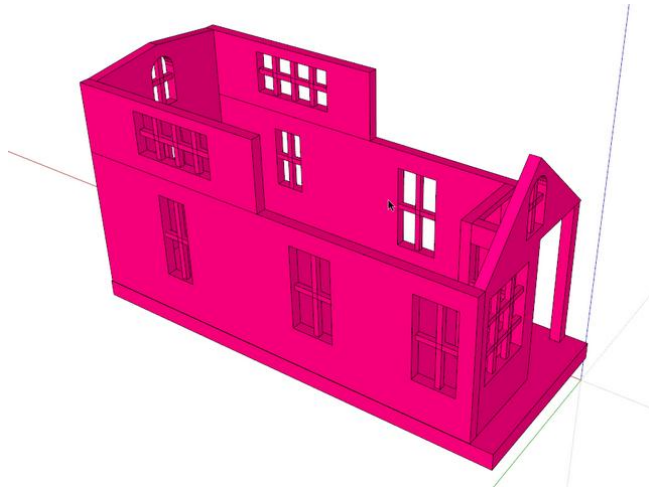


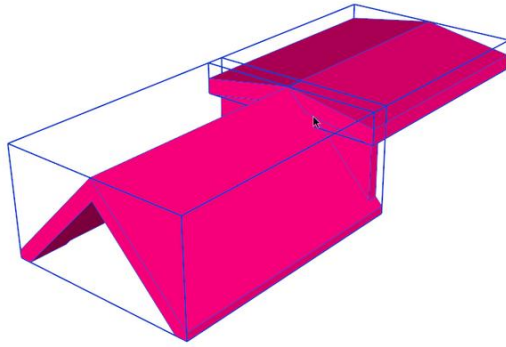


Guidelines intersect original window corners and are used to draw windows with the Rectangle tool on the new walls

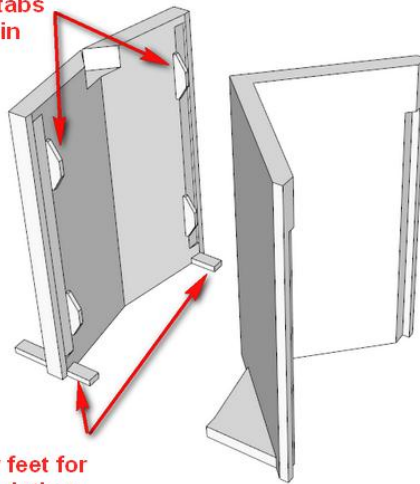


Copy this group to make the window grills

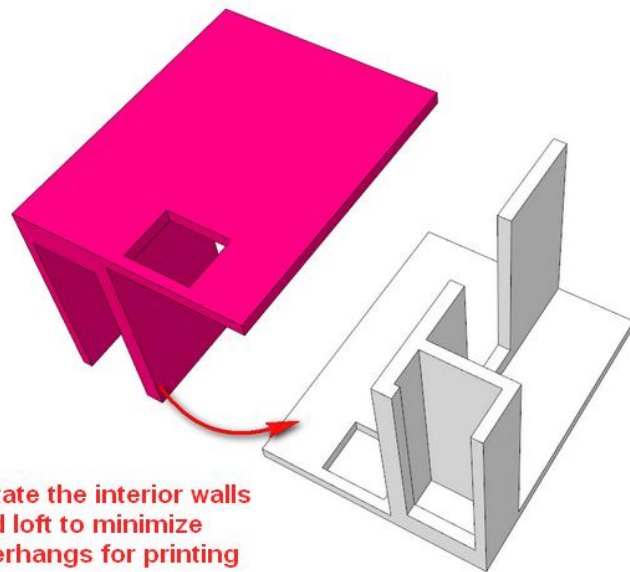




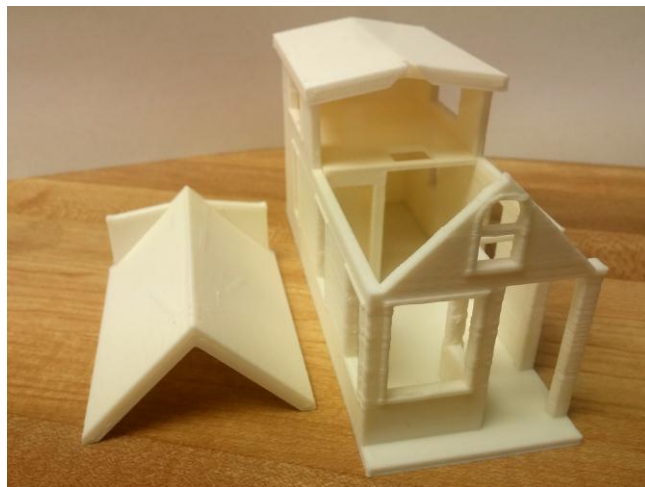
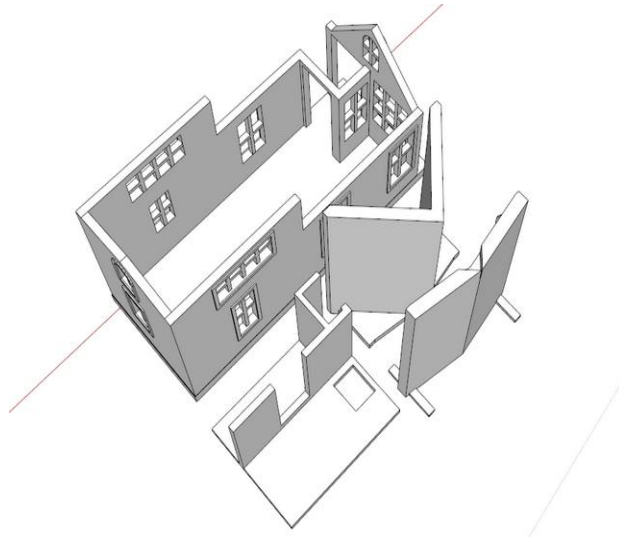
Add permanent tabs to keep the roof in place on the final model

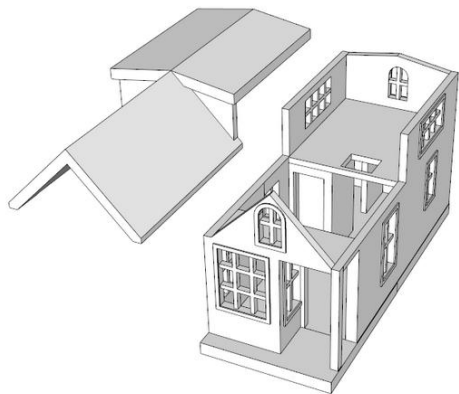
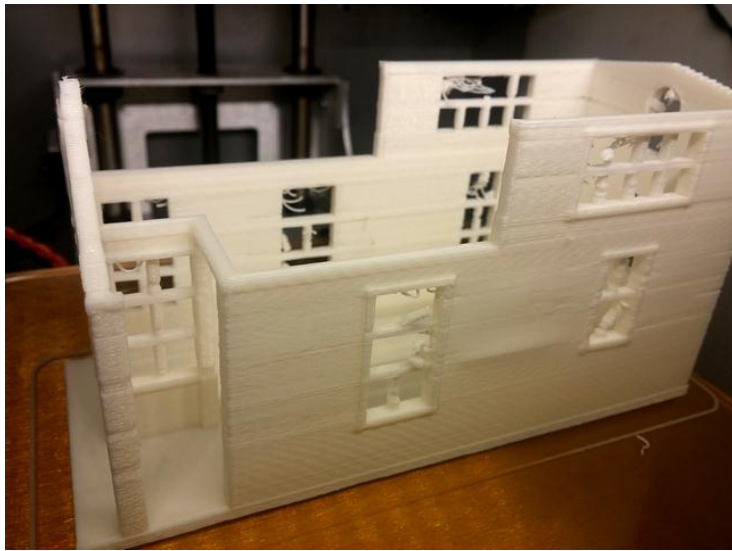
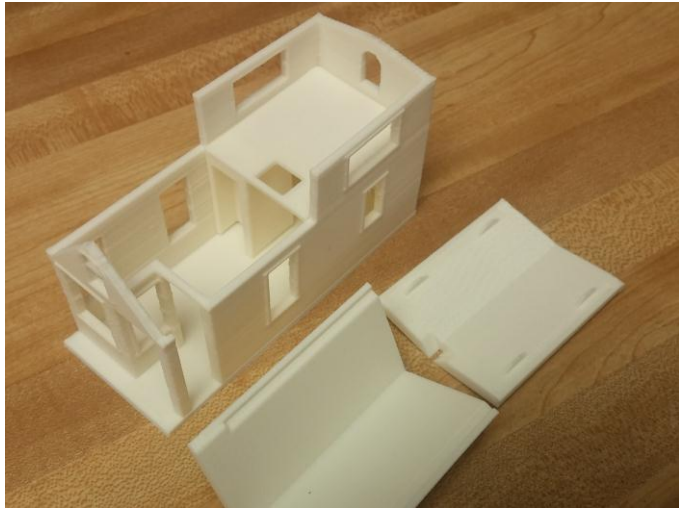


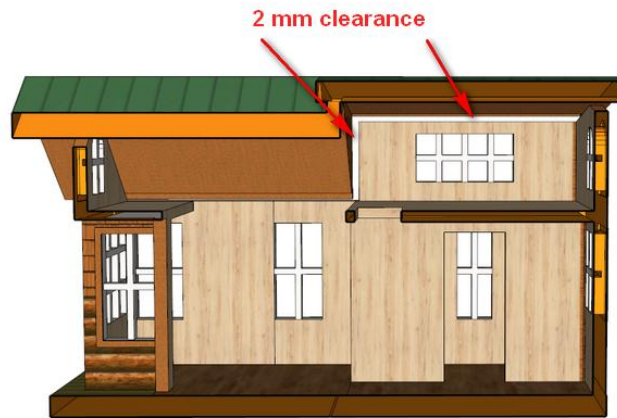
Add temporary feet for stability while printing



Rotate the interior walls and loft to minimize overhangs for printing







This section cut shows clearance added between the roof and walls to keep them separate while printing.



