Windows: odd shapes

– round windows

also for oval and elliptical windows
combine arches and/or circular wall segments

– triangular

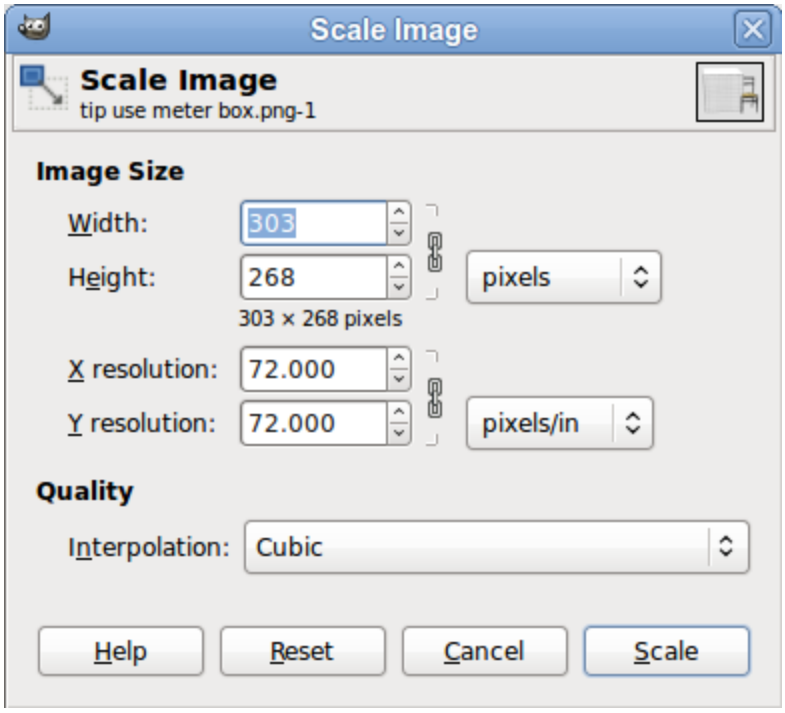
use triangular windows from Sketchup Warehouse
combine with (upside-down) triangle

How to apply transparent textures

How to make textures using The Gimp

Not every image makes a good texture. A good texture should repeat vertically and horizontally without showing any seams. Using The Gimp you can easily make a seamless texture of any image.

Use File --> Open to load an image.
Click Image --> Scale image to adjust the image size. If the image width is larger than 5612, set *Width* to 512 and do a *Tab* on the keyboard to adjust the *Height* setting. Normally these two are connected: if the chain symbol is open, click it to close it and try again.
Set the *X and Y resolution* both to 72. This is the optimal pixel density for most screens.
Click *Scale* to perform the actions you have set.



Now click Filters --> Map --> Make seamless and the edges of your image will be changed in such a way that they connect seamlessly vertically and horizontally.

Now save the image in a format that can be used by SH3D, ie. JPG, GIF or PNG.

(How to install *Low Frequency Even* filter)

How to give imported furniture the correct size

author: Hans Dirkse (with thanks to Emmanuel Puybaret for the idea)

Sometimes, when you import a piece of furniture, it has "strange" measures. On some models it's obvious that you should multiply by 2.54 to convert inches to centimeters. Other models are too big (or small) by tenfold or hundredfold. But occasionaly you don't see which multiplication factor you should use, especially difficult when it's hard to judge what the correct size should be.

As an example, we shall look at a chair. When importing, the height of a chair is the height of the backrest. Unfortunately this height can vary quite a bit between different designs. However, all chairs have something in common: the seat has an average height of 43 or 44 cms. That's where the "meter box" comes in handy.

The meter box is a standard box with dimensions of 100x100x100 cms. It has a texture applied that is exactly 100 cms in size. You can download the texture here.

How to make a door

author: Emmanuel Puybaret (link)

There's no way to specify a door swing in OBJ format. The OBJ format isn't that clever!
If you want to achieve that with your own model, you should create a custom SH3F file containing your door model (use Furniture Library Editor if you want to), and add the following properties in the PluginFurnitureCatalog.properties file contained in the

SH3F zipped file (where n is the number of the model):

```
doorOrWindow#n=true
doorOrWindowWallThickness#n=
doorOrWindowWallDistance#n=
doorOrWindowSashXAxis#n=
doorOrWindowSashYAxis#n=
doorOrWindowSashWidth#n=
doorOrWindowSashStartAngle#n=
doorOrWindowSashEndAngle#n=
```

For example, the default door defined in Sweet Home 3D catalog is defined this way:

```
name#19=Door
category#19=Doors and windows
icon#19=/com/eteks/sweethome3d/io/
resources/door.png
model#19=/com/eteks/sweethome3d/io/
resources/door.obj
width#19=91.5                       width of model at insertion time
                                    (cbc)*
depth#19=14.5                       ? depth of door (excl. arc) at
                                     insertion time **
height#19=208.5                     height at insertion time (cbc)*
movable#19=false
doorOrWindow#19=true                magnetism: true="on"
doorOrWindowWallThickness#19=7.5    wall thickness, adapts to real
                                    thickness
doorOrWindowWallDistance#19=1       distance from the face of the wall
doorOrWindowSashXAxis#19=5          relative X-distance between arc &
                                    insertion gap
doorOrWindowSashYAxis#19=8.5        relative Y-coordinate where arc
                                    starts
doorOrWindowSashWidth#19=81.5       net depth of arc
doorOrWindowSashStartAngle#19=0     start angle of arc that indicates
                                    opening
doorOrWindowSashEndAngle#19=-90     end angle of arc that indicates
                                    opening

                                    * (cbc) = can be changed in SH3D
                                    ** = changes automatically during insertion
                                    when magnetism is "on"; this is the part
                                    inserted into the wall
```

I guess it's not so easy to handle but it's the way all doors and windows are defined in Sweet Home 3D. I'll try to add some options about doors in a future version of the Furniture Library Editor.

How to insert a spiral staircase

This what we will make:
Two rooms on top of each other, each 10x10 meters large and 250 cms high, connected by a circular staircase. The staircase goes through a 30 cms thick floor, forming a round hole in ceiling and floor. The sides of the hole will be filled.

STEP 1 - make the walls and ceiling of the upper floor

1. Draw a square room with walls of 10 meters and 250 cms high.
2. Create a room, modify the room and uncheck the floor.
3. Apply colours and/or textures as needed.
4. Select the four walls and the "floor" and use Tools --> Copy as new furniture, then Paste to form the second floor walls and ceiling.
5. Make a note of the coordinates of your copy (here: 500,500), so that it will fit in the correct place when you assemble your room.
6. Give the object the correct elevation (here: 280 cms), then move it to the side.
7. Delete the floor/ceiling.

STEP 2 - fill the gap

8. Use thin walls (0.1 cms is as thin as SH3D allows) to draw the outline of the hole in the ceiling (here: circle with diameter of 200 cms).
9. Give all walls the height that fills the gap between the ceiling of the 1st floor and the floor of the 2nd floor (here: 30 cms).
10. Give the correct colour and/or texture to the outside of the straight walls, and to the inside of the curved walls.
11. Use Tools --> Copy as new furniture to copy and Paste the walls.
12. Give the object the correct elevation (here: 250 cms), then put it aside for later use.

STEP 3 - make the floor of the 2nd floor

13. Insert a thin (0.1 cms) wall that divides the room in two. This is necessary because SH3D cannot correctly make a room with a round hole in the middle. Make sure that the dividing wall follows the division in the circular wall, otherwise it won't work.
14. Double-click to create two rooms around the hole.
15. Insert a small box (0.1x0.1x0.1 cms) on each floor in a corner where you can't see it. This is necessary because SH3D doesn't allow to copy empty rooms/floors/ceilings when using Tools --> Copy as new furniture. In this example I use a "large" red box for clarification.
16. Modify the rooms and uncheck the ceiling, and give the floors a colour/texture.
17. With the rooms and boxes selected, use Tools --> Copy as new furniture to make a copy of the floor
18. Use Paste to insert the floor, give it the correct elevation (here: 280 cms) and move it to the side

STEP 4 - make the ground floor

19. Modify all walls and give them the correct heigth for the ground floor (here: 250 cms).
20. Modify the rooms, make the ceiling visible, the floor invisible; apply colour/texture as needed.
21. Delete the walls around the hole, as well as the temporary wall
22. Insert a new room, make the ceiling invisible; apply colour/texture as needed.
23. You now have the ground floor with walls, floor and a ceiling with a hole.

STEP 5 - assembly

24. Select (1) the object that fills the gap, (2) the floor of the 2nd floor, and (3) the walls and ceiling of the second floor.
25. Give all three objects the correct coordinates (here: 500,500).

26. Select and insert the staircase, and adapt its height so that the top-step aligns with the top floor