Sketchup Tutorial

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GETTING STARTED

Sketchup is a 3D modeling program that can be used to create 3D objects in a 2D environment. Whether you plan to model for 3D printing or for other purposes, Sketchup offers all the tools needed to produce professional and quality results even for a beginner. This tutorial will take you through some of the basic uses of Sketchup.

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In this tutorial, you will learn the following:

1. GETTING STARTED

1. Begin by opening Sketchup.

On a PC, click Start > Programs > Sketchup 2016 > Sketchup , or click on the Sketchup shortcut on the desktop.

On a Mac, click Macintosh HD > Applications > Sketchup 2016 > Sketchup , or click the Sketchup icon in the Dock. (Figure 1)

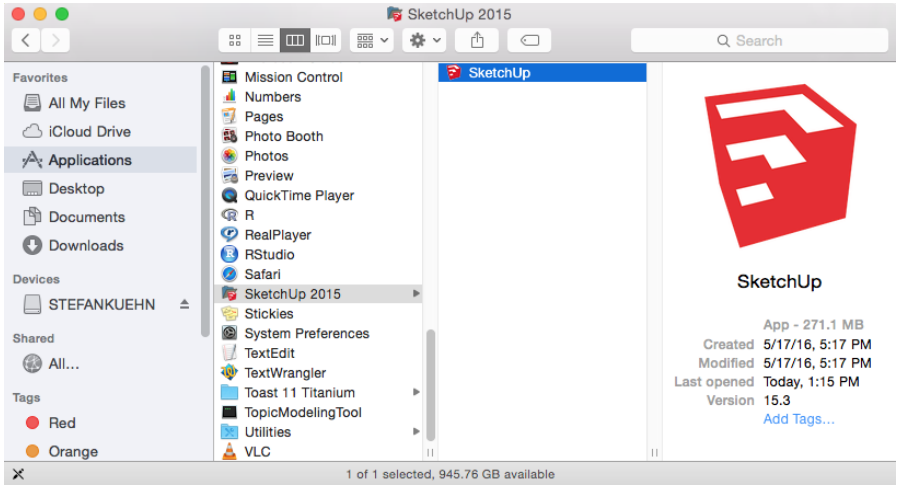

Figure 1. Navigation to Google Sketchup on a Mac.

2. SETTING UP THE TEMPLATE

Once the program is open, you are prompted with a window used to select a template. (See Figure 2) Typicaly you will use the simple template - feet and inches. You can of course choose another template based on your project.

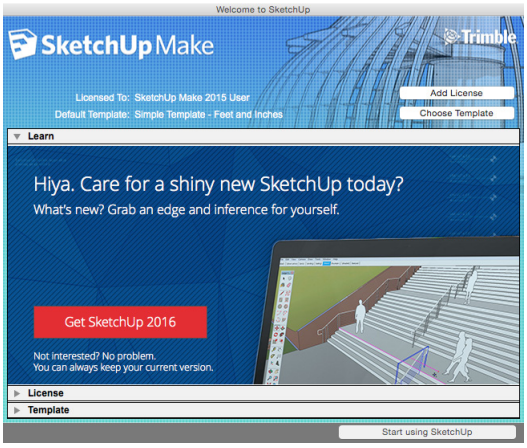

Figure 2. Opening Sketchup.

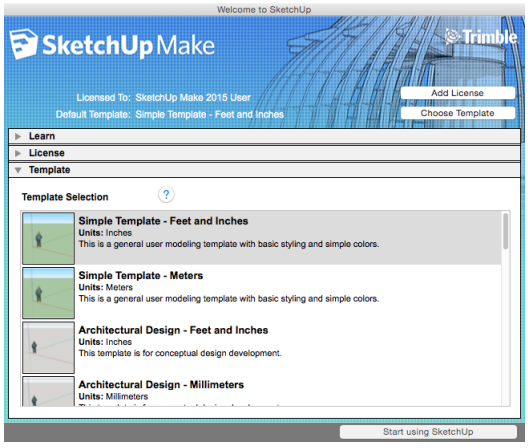

Figure 3. Choosing a Template.

3. UNDERSTANDING THE LAYOUT

Once you have selected the template, you will be taken to a blank project in Sketchup. (As seen in Figure 4.)

From here you can select any tool you want to, to begin creating your first 3D object.

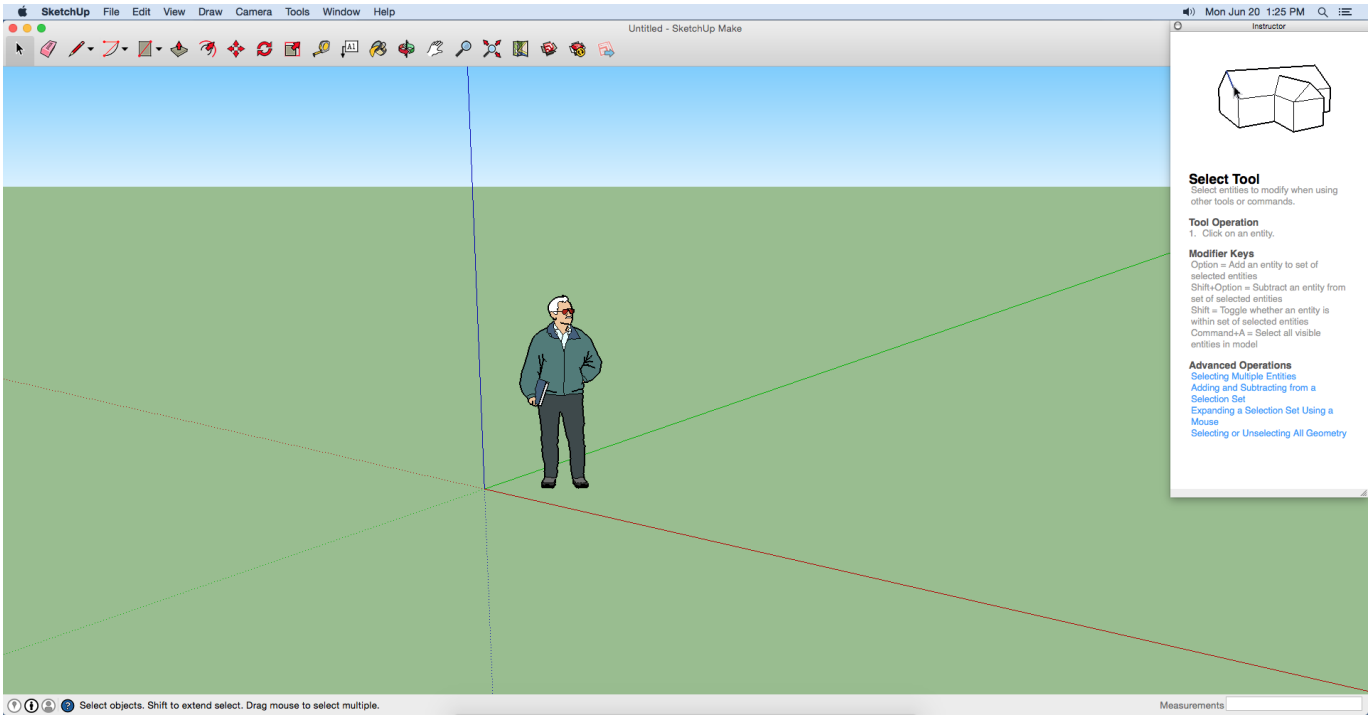

Figure 4. Layout.

4. TOOLBAR

The Toolbar is located at the top left of your window. This is were you will be selecting the different tools to help build the object you want to create. To select a tool, simply click on the one you want.

Figure 5. Toolbar.

5. NAVIGATING IN 3D

To Navigate in the 3D environment of Sketchup, use the Scroll Wheel along with the Pan tool.

Pressing in the Scroll Wheel and dragging the mouse will rotate our view of the 3D space. Scrolling the Wheel will zoom in and out. Left Clicking the mouse with the Pan tool selected will drag the view point around.

Figure 6. Mouse.

6. TOOLBOX DESCRIPTION

Selection tool

A commonly used tool, used to select either faces, lines or objects. To select a face, click once on a face. To select a line, click once on the line. To select an object double click on the object.

Eraser tool

This tool Erases lines. To erase a singular line, click on it once. To erase multiple lines, click and drag.

Line tool

Creates straight lines. Connecting multiple lines will make faces.

Freehand tool

This tool will let you draw freehand lines. Connecting these will create a face.

6. TOOL DESCRIPTION CONT.

 Arc tool
Creates arcs or circles. To create an arc click once, this will be your center point. Clicking some where else will create another point. From here, you can drag your mouse around and a preview of the arc will appear. Clicking again will create an arc. To make a Circle, click on the workspace and rotate the arc preview around. When the circle is completed, click the workspace again.

 2 Point Arc tool
Creates arcs using two points.

 3 Point Arc tool
This tool is similar to the 2 point arc tool, except that it will pivot the arc around the second point.

 Pie tool
The Pie tool is almost identical to the first Arc tool, except that it creates faces instead of lines.

 Rectangle tool
This is used to create rectangle and square planes.

 Rotated Rectangle tool
Creates rectangles and squares on an angle.

 Circle tool
Used to create circular planes.

 Polygon tool
Creates polygonal planes.

 Scale tool
Creates ellipse shapes that hold text.

 Offset tool
Creates copies of lines at a uniform distance from the originals.

6. TOOL DESCRIPTION CONT.

 Move tool
Moves selected objects, lines or planes.

 Rotate tool
Rotates selected objects lines or planes using a protractor.

 Push / Pull tool
Expands planes into 3D objects.

 Tape measure tool
Used to measure lengths of any object or region of space.

 Text tool
Creates a text note where ever it is placed.

 Paint tool
Used to paint any surface or plane.

 Orbit tool
Used to rotate the viewing angle in the 3D space.

 Pan tool
Used to pan the camera around the 3D space.

 Zoom tool
Zooms in on an area.

 Zoom extents tool
Brings zoom back to center of the workspace.

 3D Warehouse
Opens the 3D warehouse. From here you can add user created models to your workspace.

6. TOOL DESCRIPTION CONT.

 Extension Warehouse
Opens the extension warehouse. From here you can add on more features to Sketchup.

7. CREATING BASIC SHAPES

Once in the 3D workspace, to create a shape you will need to select the Rectangle tool. From here, you can click and move your mouse until the preview is the correct shape and size. Then you can click to lock the preview into place. Next, you will need to select the Push / Pull tool to expand the plane into a 3D object. To use the Push / Pull tool, simply click and drag on the rectangle face.

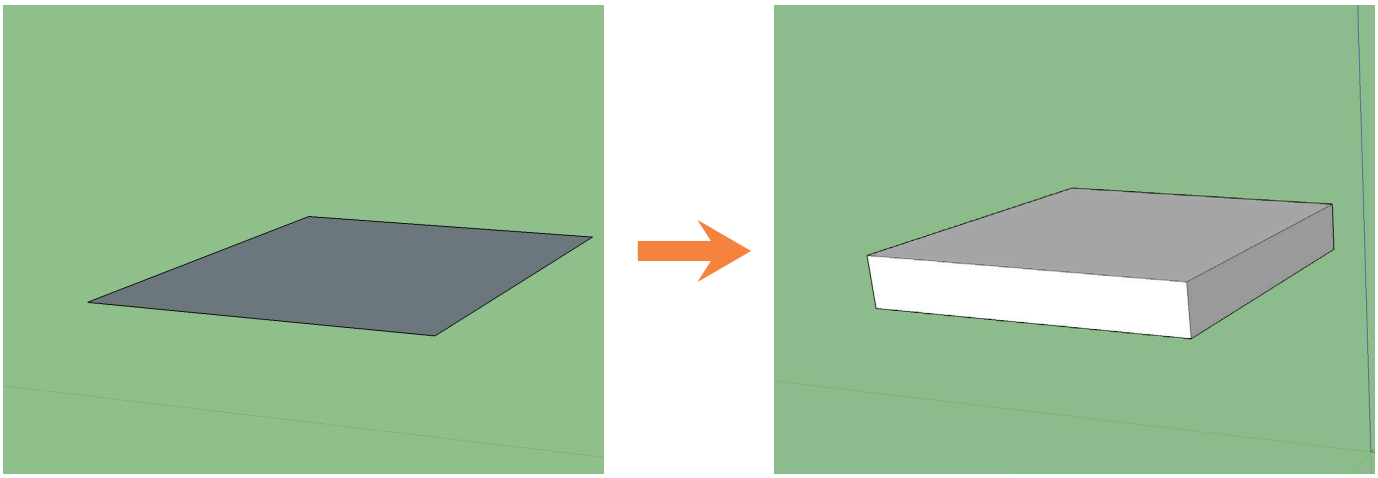

Figure 7. Plane.

Figure 8. Cube.

NOTE: The rectangle tool can be accessed with the R key, and the Push / Pull tool can be accessed with the P key.

8. CREATING AND PLACING BASIC TEXT

To add 3D text to your workspace, you will need to use the 3D Text tool. This is located under tools, 3D Text. A window similar to Figure 9 will now appear. From this window, you can type what you would like the 3D text to say. You also have some basic text editing options such as different fonts and alignment. One important thing to take note of would be the Filled and extruded check boxes. You will want to make sure Filled is checked, if filled is unchecked the text will simply be flat empty lines instead of a 3D object. You will also want to make sure Extruded is checked. The Extruded check box determines weather or not your text will be a flat plane or a 3D object. The measurements you put into the box next to Extruded will determine how far your text will go on the z axis. Clicking place will create your 3D text in the workspace.

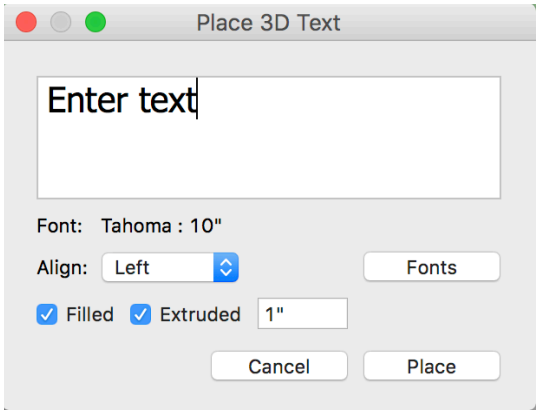

Figure 9. Text.

Once you have hit the place button, you will see a preview of the text. Left click to place the text in the workspace. (See Figure 10 below.)

Figure 10. Text.

9. GROUPING AND COMPONENTS

Grouping things in Sketchup is a very important part of making 3D objects. This is because in Sketchup, if you have two objects or faces touching each other they will automatically fuse together. To fix this, you can group an object, or multiple objects to prevent the group from fusing to an object that is touching. You can also use groups and components to select multiple objects at once. There are two different ways to make "groups". There are Groups and Components which are similar.

To create a group, select the objects or faces you want to group and right click. Then select Make Group.

To create a component, select the objects or faces you want to group and right click. Then select Make Component.
A window will appear that looks like figure 11.
You can fill out the name and description if you want to but it is not necessary. Once you hit Create at the bottom it will create a component.

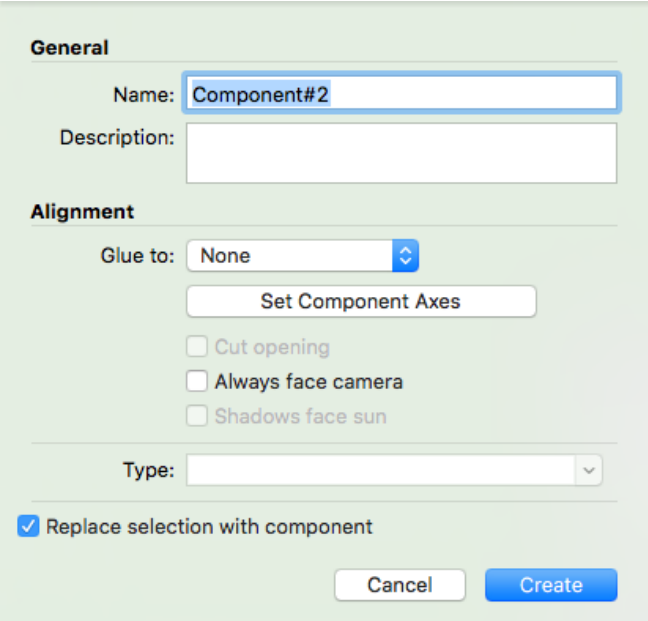

Figure 11. Extensions.

10. EXPORTING AS AN STL FILE

Saving as a .stl file is useful because it allows you to print in 3D, or load the file into another 3D modeling software for further editing. To save as an stl file, we will need to add an extension from the extension warehouse. To do this, follow the steps below:

1. Click on the Extension Warehouse Tool.  A window like Figure 12 will pop up.

2. From this window use the search bar and look up Sketchup STL, or click on Sketchup STL from the top extensions window.

3. A window explaining what Sketchup STL is will appear, in the top right click Download. (Figure 13)

Figure 12. Extensions.

Figure 13. Download.

10. EXPORTING AS AN STL FILE

Now that we have the .stl extension installed, we can save our file as .stl. To do this go to File, Export STL. A window like Figure 14 will now come up.

1. Export selected geometry only should be unchecked unless you want to only save what you have selected in the workspace.
2. The Export unit drop down menu can be used to select what type of measurement units you want the .stl file to have.
3. File format should be ASCII.
4. Then you can hit Export and save the file wherever you would like.

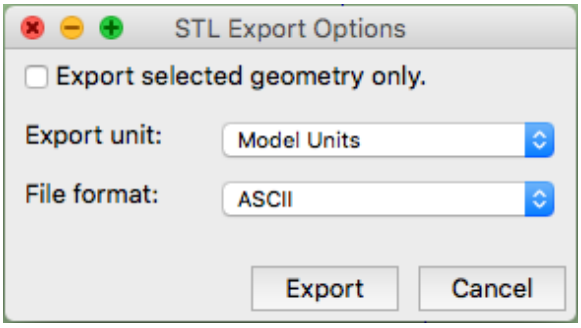

Figure 14. Download.

18. SAVING

Remember to save your work often. Saving frequently reduces the risk of losing Your work. To save your Sketchup file, do the following:

1. Click File > Save.
2. Navigate to the place you would like your document to be saved by using the drop down menu and the navigation window.
3. Enter the name of your document in the Save As text field.
4. Choose a format to save your project in from the Format drop down menu.
5. Click the Save button in the bottom right corner of the dialogue box.
6. Check to make sure that your document is saved in the place you intended.