

BASIC KNOWLEDGE OF SKETCHUP SOFTWARE

SKETCHUP

Getting Started:

For visualizing our design in three dimensions and making it in as per our imagination on screen, require software for implementation.

In the market many software are available for making design in 3 dimensional like, 3D max, AutoCAD 3D, Sketch up and many more.

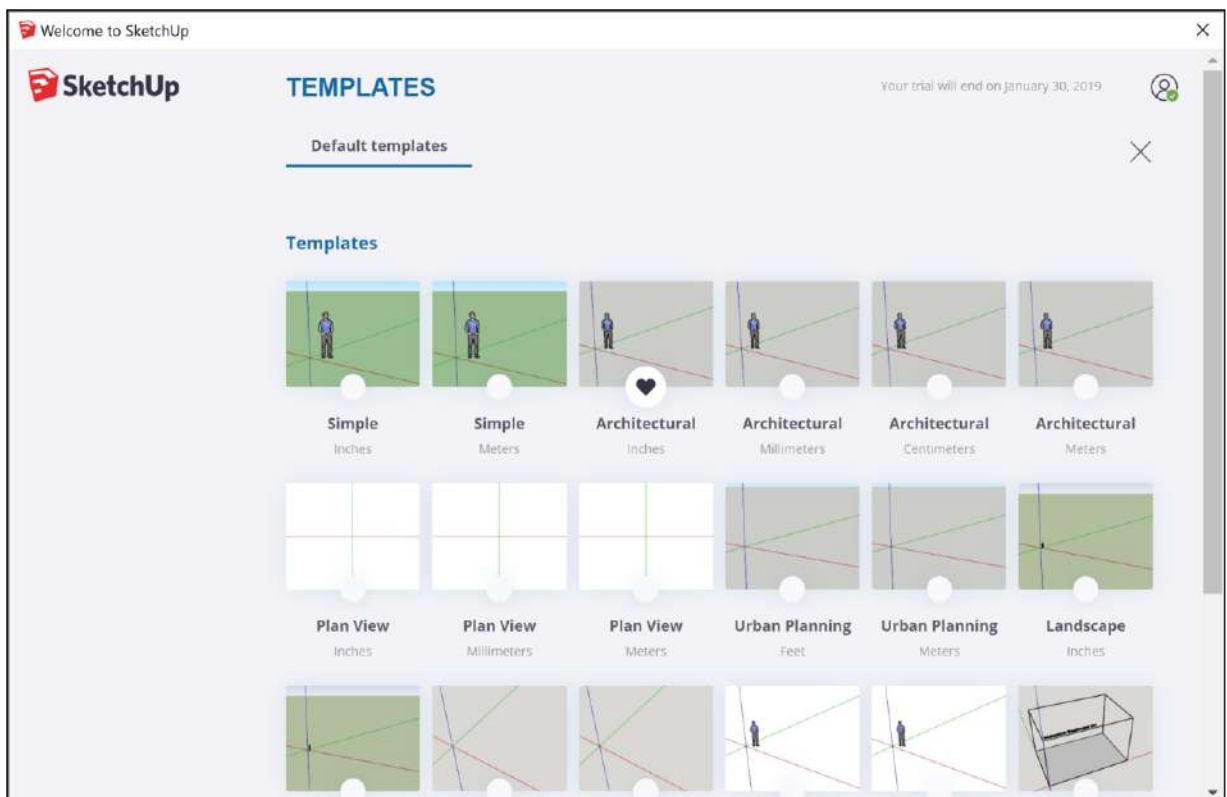
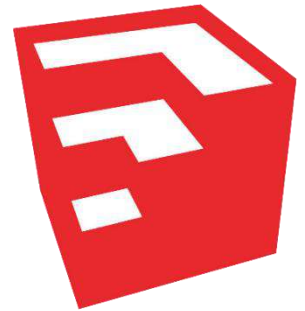
Sketch up is one of the simple software for use. As a student or expert it is easy to work. Its simple tools are its best part. With the available extension plugin tools, you can create a perfect and step by step 3D model as per your requirements.

Sketch up is a free and paid software.

Dedicated 3D warehouse, where users upload their creation and others can use it hassle free. We can say it's a 3D library where every sketch up user can download and use or even modify and re-upload their work.

To open a SketchUp file:

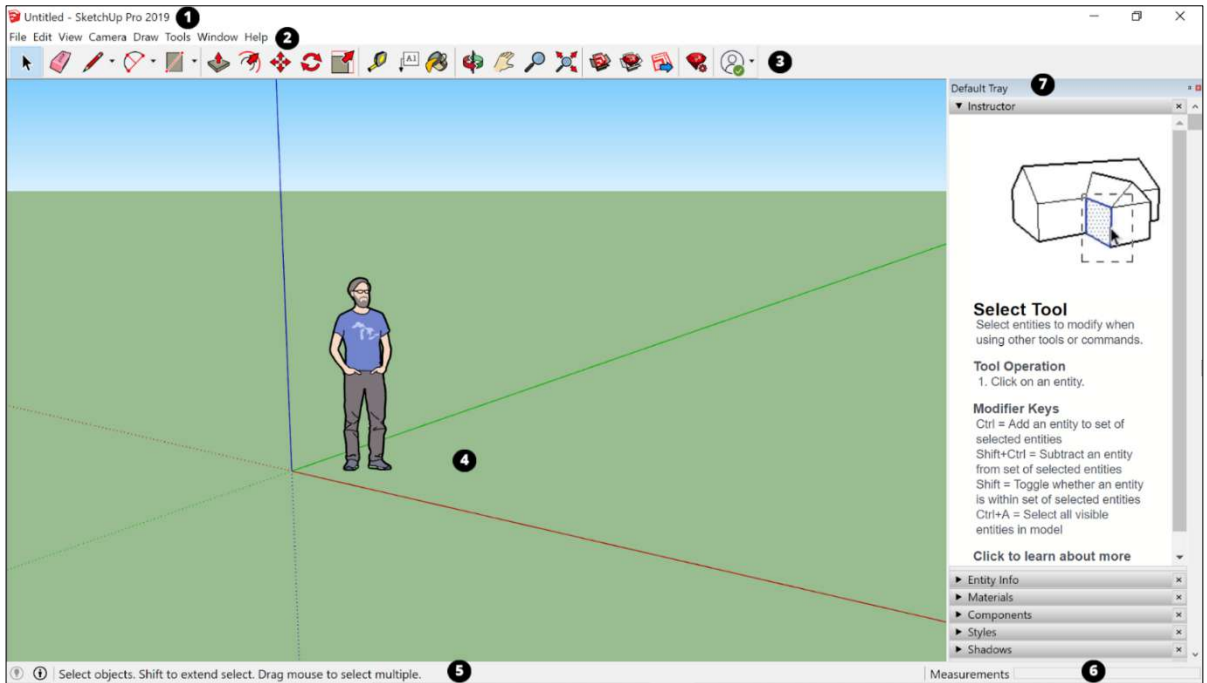
Open	Sketchup
Select	A template (we will use architectural inches template in this course)
Click	On architectural inches template



Choose a Template

SKETCHUP

SketchUp Interface:



SketchUp Interface

1. **Title bar:** it contains the standard window controls (close, minimize and maximize) and the name of the current open file.
2. **Menu bar:** The SketchUp tools, commands, and settings are available within the menus on the menu bar.
Menus are File, Edit, View, Camera, Draw, Tools, Window, and Help.
3. **Getting Started Toolbar:** The getting started toolbar is the one you see by default. It contains the basic tools to begin with your 3D model.
To display additional toolbars,
Select View > Toolbars.
In toolbar dialog box, select the toolbars you want on your Getting Started Toolbar and click Close.
4. **Drawing Area and Axes:** The drawing area is where you create your model. The 3D space of the drawing area is identified visually by the drawing axes, which provide a sense of direction in 3D space while you work.
Red line is the X-axis, Green line is the Y-axis and Blue line is the Z-axis.
5. **Status bar:** Two important elements on the status bar are Tips for using the tools and Measurement Box.
Tips for Using a tool: It will offer you the information of the tool you are using. This will be helpful when you're not sure how the tool works.
6. **Measurement Box:** This is a main tool for creating an accurate model. It will display the dimensions as you draw.
7. **Default Panel:** On the right side of the screen, you see a tray of panels, including the Instructor, Materials, Styles, and so on. The Default Tray appears when you open SketchUp, but you can close the Default Tray of panels by click the Close button in the upper right. Toggle the tray so it's visible or hidden via the Window > Default Tray submenu.

SKETCHUP

SketchUp Tools:

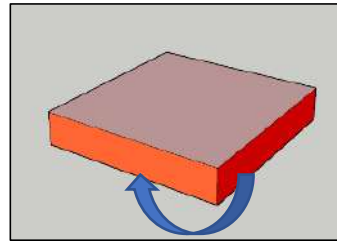
Select (Spacebar)			Make Component
Paint Bucket (B)			Eraser (E)
Line (L)			Freehand
Rectangle (R)			Rotated Rectangle
Circle (C)			Polygon
Arc (A)			2 Point Arc
3 Point Arc			Pie
Move (M)			Push/Pull (P)
Rotate (Q)			Follow Me
Scale (S)			Offset (F)
Tape Measure (T)			Dimensions
Protractor			Text
Axes			3D Text
Orbit (O)			Pan (H)
Zoom (Z)			Zoom Window
Zoom Extents			Previous
Position Camera			Look Around
Walk			Section Plane

SketchUp Basic Tools

SketchUp Tools:

1. Orbit Tool:

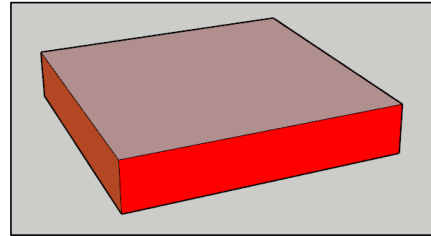
- Select**  in Toolbar
Or
Click Drag Middle mouse button to rotate the screen
Or
Type "O" on the keyboard



Orbit Tool (Step 1)

2. Pan Tool:

- Select**  in Toolbar
Or
Hold Click Drag Shift on the keyboard Middle mouse button to move the screen
Or
Type "H" on the keyboard



Orbit Tool (Step 2)

3. Line Tool:

- Select**  in Toolbar
Or
Type "L" on the keyboard
Click a specific point on the canvas
Pick from point
Pick Specify the next point
Press enter to end line sequence

If you want to snap the line to a particular axis,
Use Arrow keys

For example,

If you want to make a line of 2',

Type "L" on keyboard

Press Right Arrow key

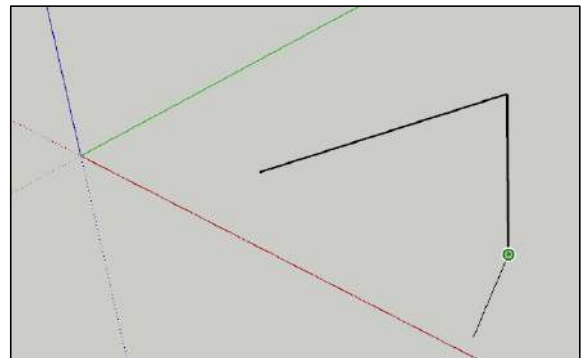
(if you want to draw a line in red

axis)

Drag a little bit

Type 2' distance

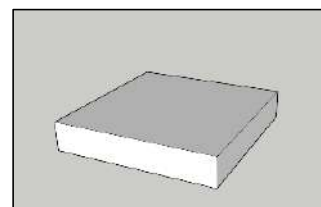
Press Enter



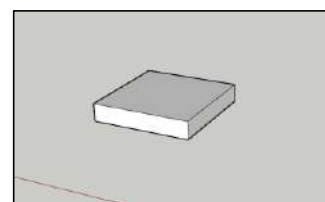
Line Tool

4. Zoom In and Zoom Out

- Select**  in Toolbar
Or
Use Middle mouse button for zoom in
Scroll up for zoom in
And
Scroll down for zoom out



Zoom in



Zoom out

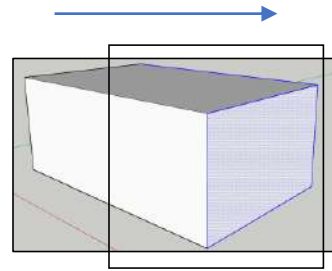
SketchUp Tools:

5. Selection Tool:

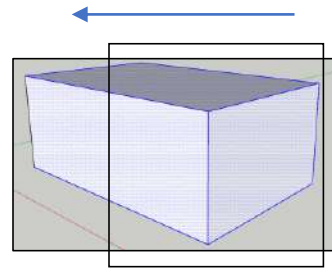
Select  in Toolbar
Or
Press "Spacebar" on the keyboard

If you'll click and drag from left to right,
Only things that come in the selection box, will
get selected.

If you'll click and drag from right to left,
Anything your selection box touches, will get
selected.

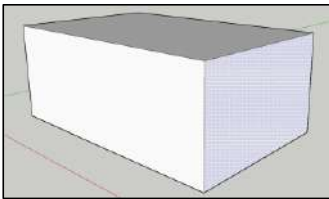


Left to Right

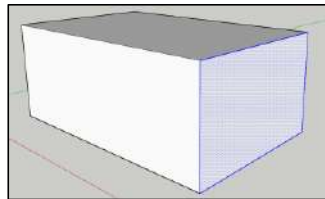


Right to Left

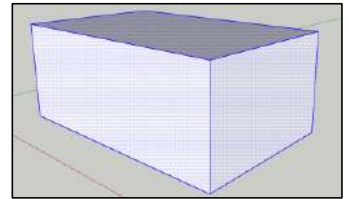
Single Click selects a face



Double Click selects face and edges



Triple Click selects the whole object

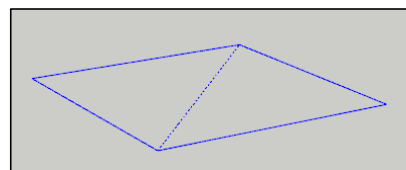


6. Rectangle Tool:

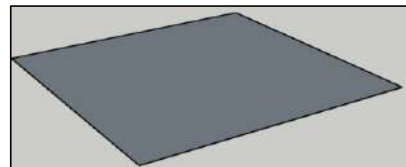
Select  in Toolbar
Or
Type "R" on the keyboard
Click a specific point on the canvas
Pick from point
Pick Specify the next point

If you want to make a rectangle with a certain
dimension, say, 2' x 3',

Type "R" on the keyboard
Click once on the canvas
Type 2', 3' (length, width)
(this will appear in the measurement box)
Press Enter



Rectangle Tool (Step 1)



Rectangle Tool (Step 2)

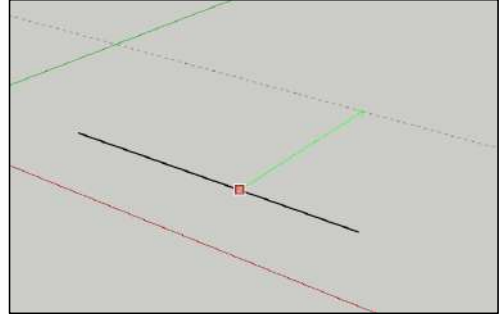
SketchUp Tools:

7. Tape Measure Tool:

Select  in Toolbar
Or
Press "T" on the keyboard
Click once on the starting point
Drag it to the other end

It is also used to draw a reference line

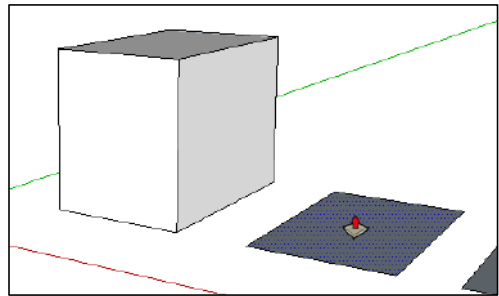
Press "T" on the keyboard
Click on the main line
Drag in the direction in which you want to draw the reference line
Type a dimension, say 10'
This will draw a reference line parallel to the main line at a 10' distance.
(Dotted line in the picture is the reference line)



Tape Measure Tool

8. Push/Pull Tool:

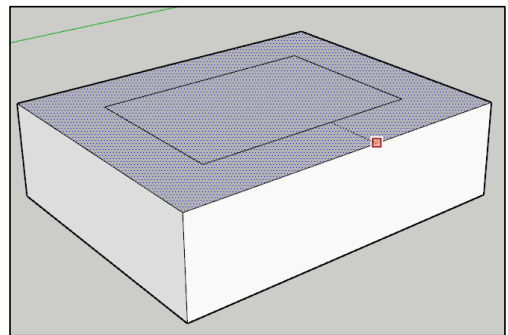
Select Face of the object you want to extrude
Select  in Toolbar
Or
Type "P" on the keyboard
Click on the face of the object
Drag it to a desired distance
Click and end
Or
Drag it a little bit
Type a distance, say, 5'
Press Enter



Push and Pull Tool

9. Offset Tool:

Select Face of the object
Select  in Toolbar
Or
Type "F" on the keyboard
Click on the face of the object
Drag in or out to a desired distance
Click and end
Or
Drag in or out a little bit
Type a distance, say, 2"
Press Enter

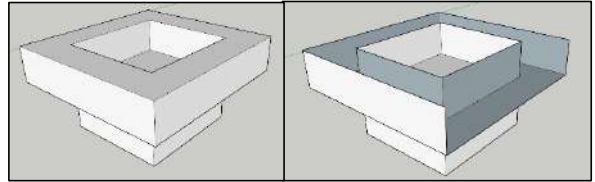


Offset Tool

SketchUp Tools:

10. Eraser Tool:

Select  in Toolbar
Or
Press "E" on the keyboard
Drag to the line or object you want to delete



Eraser Tool
(Step 1)

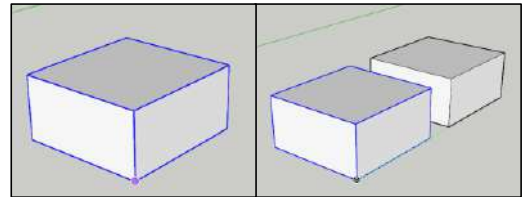
Eraser Tool
(Step 2)

11. Move Tool:

Select  in Toolbar
Or
Type "M" on the keyboard
Click the object you want to move
Drag it to a desired distance
Click and end

It is also used to copy the objects.

Type "M" on the keyboard
Hold Ctrl key
Click the object you want to copy
Drag it to a desired distance
Click and end

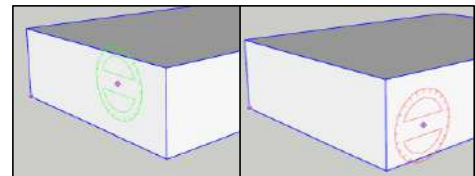


Move Tool
(Step 1)

Move Tool
(Step 2)

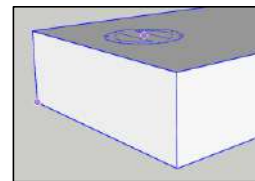
12. Rotate Tool:

Select  in Toolbar
Or
Type "Q" on the keyboard
Hover over the object. You'll see a set of crosshairs appear. The color of the crosshair will be according to the axis it is on.
Click on the object
Rotate it to your desired position
Or
Type a desired angle
Press Enter



On Green axis

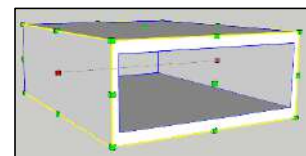
On Red axis



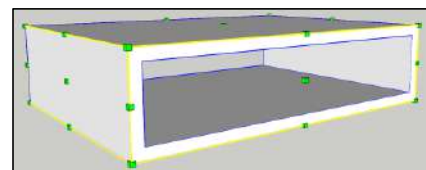
On Blue axis

13. Scale Tool:

Select  in Toolbar
Or
Type "S" on the keyboard
A yellow box with green grips appears around your selection.
For a uniform scaling, click a corner scaling grip.
For stretching the object, click an edge or face grip.
Move the cursor to scale the object.



Scale Tool (Step 1)

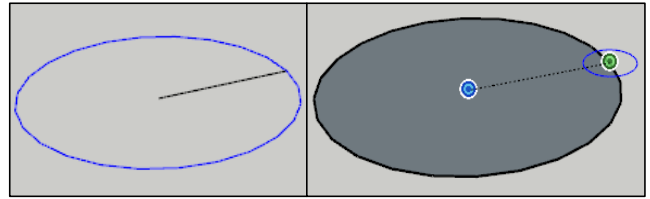


Scale Tool (Step 2)

SketchUp Tools:

14. Circle Tool:

Select  in Toolbar
Or
Type "C" on the keyboard
Click once
Drag to a desired distance
Click and end

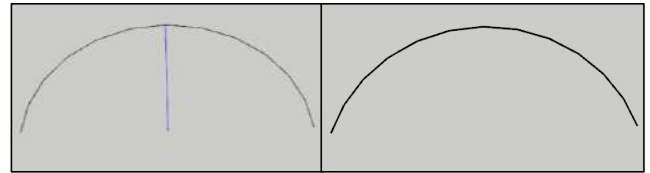


Circle Tool (Step 1)

Circle Tool (Step 2)

15. Arc Tool:

Select  in Toolbar
Or
Type "M" on the keyboard
Click once
Drag to a desired distance
Click on the second point to end



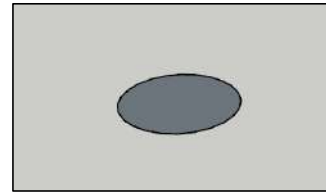
Arc Tool (Step 1)

Arc Tool (Step 2)

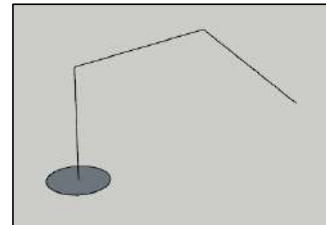
16. Follow Me Tool:

Follow Me tool will follow a path and it will extrude just like push/pull tool, but along the path.

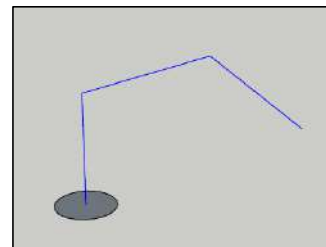
Draw a face (any 2D shape)
Draw a path (using line tool)
Select the entire path
Select  in Toolbar
Click on the face you want to extrude



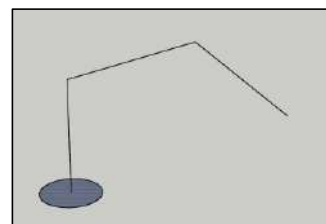
Follow Me Tool (Step 1)



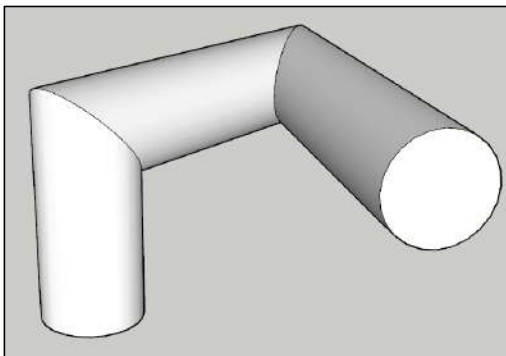
Follow Me Tool (Step 2)



Follow Me Tool (Step 3)



Follow Me Tool (Step 4)

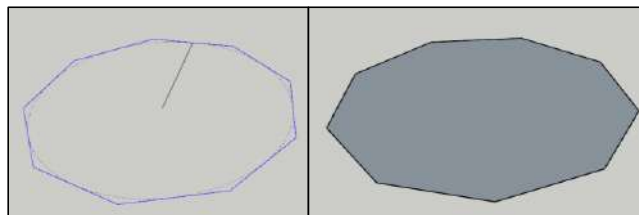


Follow Me Tool (Step 5)

SketchUp Tools:

17. Polygon Tool:

Select  in Toolbar
Type the number of sides you want
Press Enter
Click once
Drag to a desired distance
Click and end

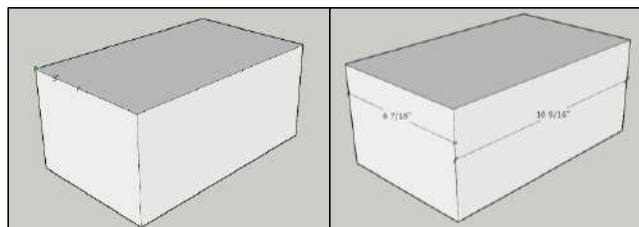


Polygon Tool (Step 1)

Polygon Tool (Step 2)

18. Dimension Tool:

Select  in Toolbar
Click on the starting point of dimension
Drag it
Click on the ending point of dimension
Drag the cursor perpendicular to the dimension
Click to fix the position of the dimension



Dimension Tool (Step 1)

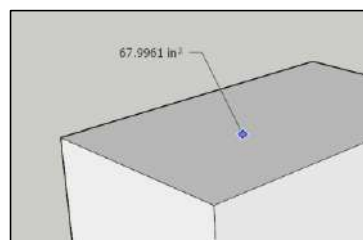
Dimension Tool (Step 2)

19. Text Tool:

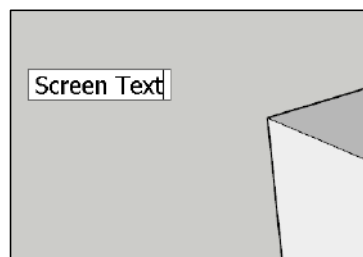
Select  in Toolbar

There are two types of text,

- Leader text
 - Click** on the model to indicate the ending point of the leader
 - Drag** and position the text
 - Click** to place the text
 - Click** on the text to change it
 - Enter** the new text
 - Click** outside the text box to end
- Screen text
 - Click** anywhere other than the model
 - Click** on the text to change it
 - Enter** the new text
 - Click** outside the text box to end



Leader Text



Screen Text

20. 3D Text Tool:

Select  in Toolbar
Type in the text
Change Font, style, size and height according to the preference
Check filled box
Check extrude box
Click on Place button
Drag to position the text
Click to end



3D Text Dialog box



3D Text

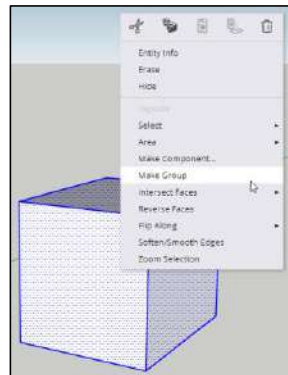
SKETCHUP

➤ Make a Group:

With the Select Tool (Spacebar), select all the entities you want to include in your group.
Select **EDIT > Make Group** from the Menu Bar.

Or

Right click on the selected area, in the options, click on **“make a group”**



Make a Group/Component

➤ Make a Component:

With the Select Tool (Spacebar), select all the entities you want to include in your group.
Select **EDIT > Make Component** from the Menu Bar.

Or

Right click on the selected area, in the options, click on **“make a component”**

➤ Default tray:

A default tray will contain the most commonly used dialogue box including entity info, shadows, styles, layers, scenes, etc.
For creating a new Default Tray:

Windows > New Tray

A dialog box will appear.

Name your new tray and mark on the dialogs you want to keep in your tray.

Click add.

For hiding the tray,

Windows > (Tray name) > Hide Tray

For showing the tray again,

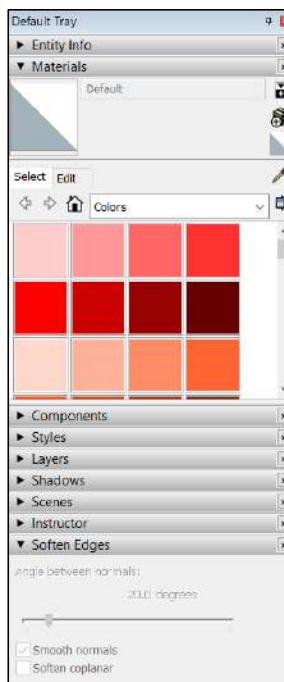
Windows > (Tray name) > Show Tray

For deleting the tray,

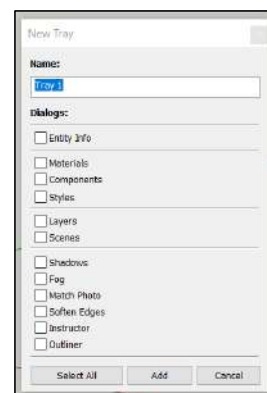
Windows > (Tray name) > Delete Tray

Note:

- You cannot delete the default tray.
- You can move the tray around the screen by simply selecting the top bar of the tray and drag it to a desired location. Or,
- Change the width of the tray by dragging the side edges of the tray, left and right.



Default Tray



Create new Default Tray

SKETCHUP

➤ Create Shortcut Keys

Windows > Preferences

SketchUp Preferences dialog box will appear.

Click Shortcuts

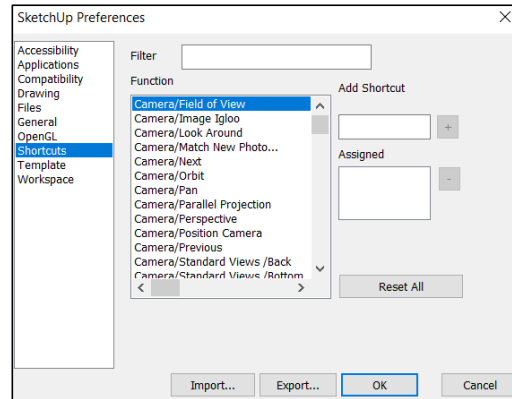
Type a function in "Filter" to search for it
Or

Scroll Down in functions to find one

Type a letter shortcut in "Add Shortcut"

Click "+" plus sign to add

Click OK



Shortcut Keys settings

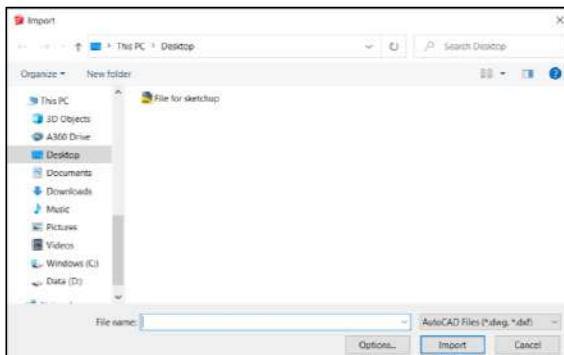
➤ Import an image or a CAD File

File > Import

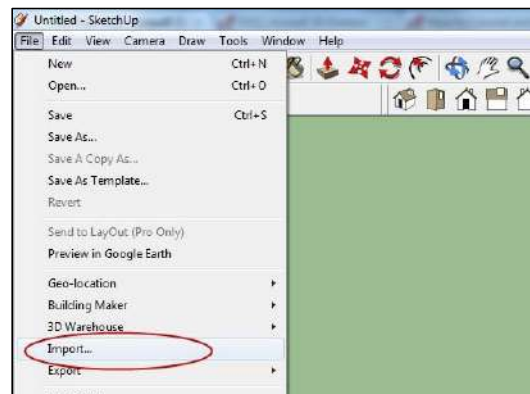
Browse to the folder that contains your image or CAD File.

Select the image

Click Import



Import dialog box



Import an image or file

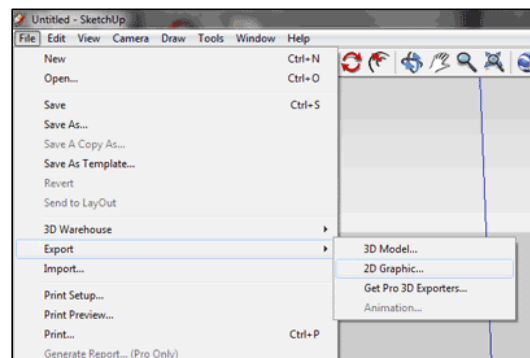
➤ Export a 2D image

File > Export

Click 2D Graphic

Browse to the folder

Click Export



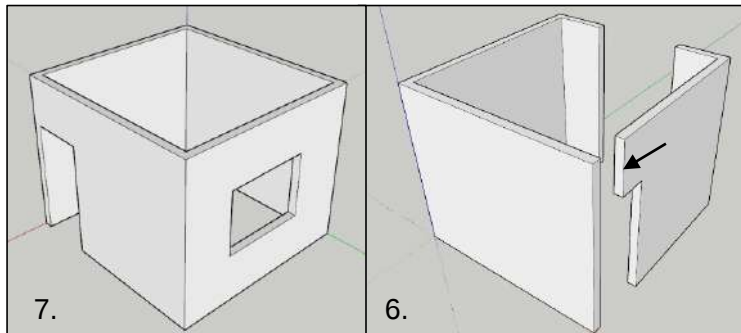
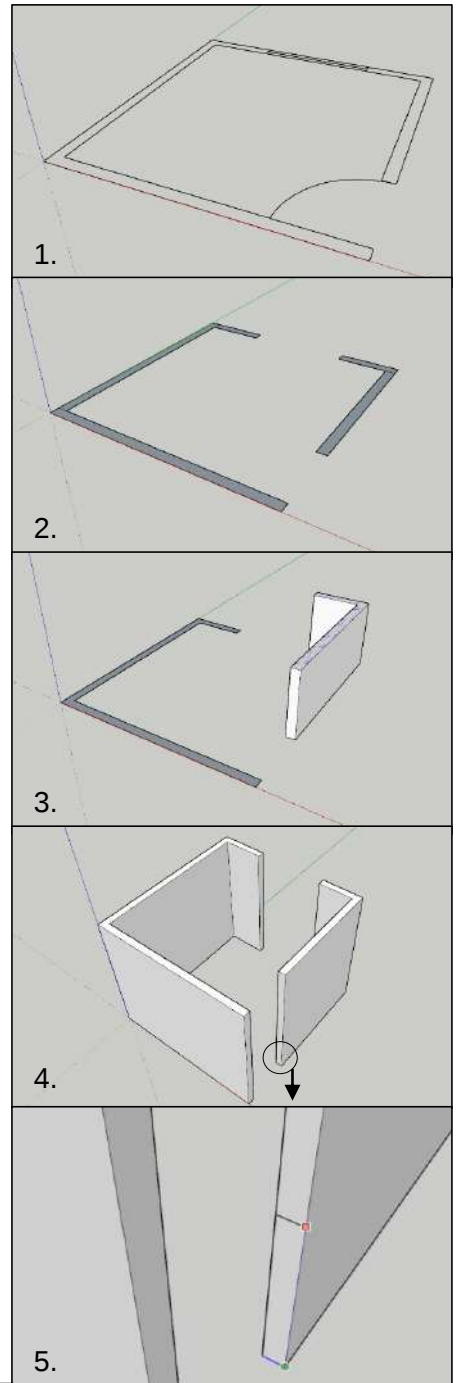
Export an image or file

Create Wall:

1. Open SketchUp
2. Choose Architectural Template
3. Import a CAD File (File > Import)
Note: The imported file will be a group by default. This will be our reference plan to create a 3D model.
4. Type **R** on keyboard to activate rectangle tool.
5. Create rectangles on the walls on the plan
Note: Leave the area where we have doors and windows.
6. Press spacebar to escape the rectangle command
7. Click on the reference plan
8. Right click and hide it for a time being.
9. To extrude or give height to the walls, Type **P** command for push and pull tool.
10. Hover over the face of the rectangle
11. Click on the face
12. Drag it upwards
13. Type the height, say, 10'
14. Press enter

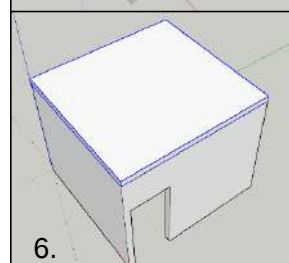
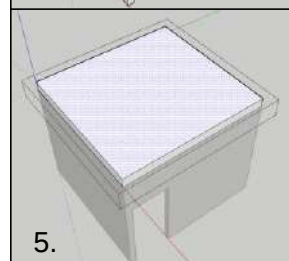
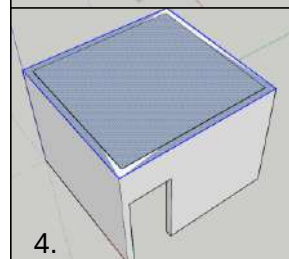
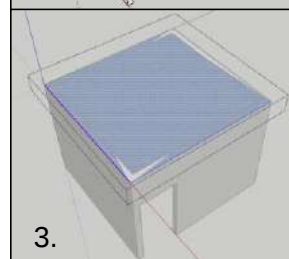
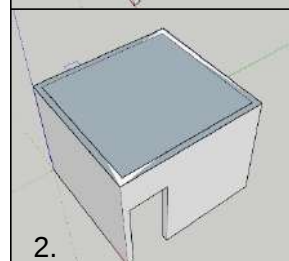
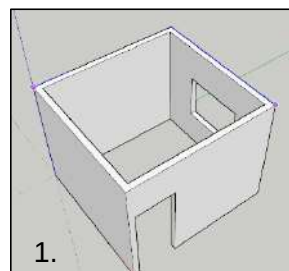
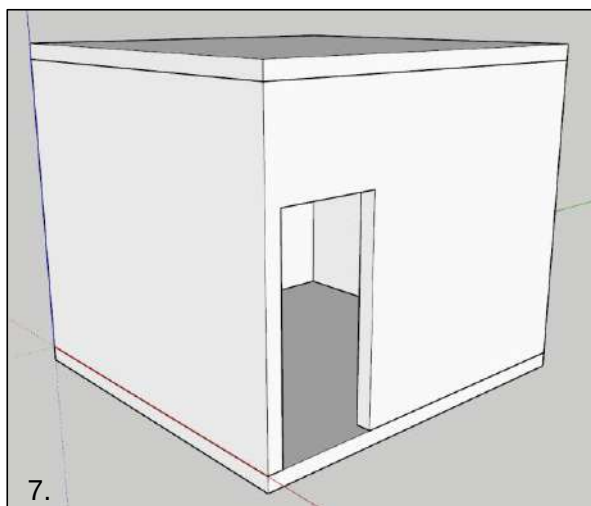
For creating Lintel and Sill,

1. Click on the bottom line of the wall, where our door will come (Picture 5)
2. Type **M** on keyboard to activate move tool
3. Press Ctrl and click on the highlighted blue line
4. Drag in upwards
5. Type the height of the lintel, i.e, 7'
6. Press enter
7. Type **P** on keyboard to activate push and pull tool
8. Pull the face for creating a wall above door. (Picture 6)
9. Similarly, make lintel and sill for window.



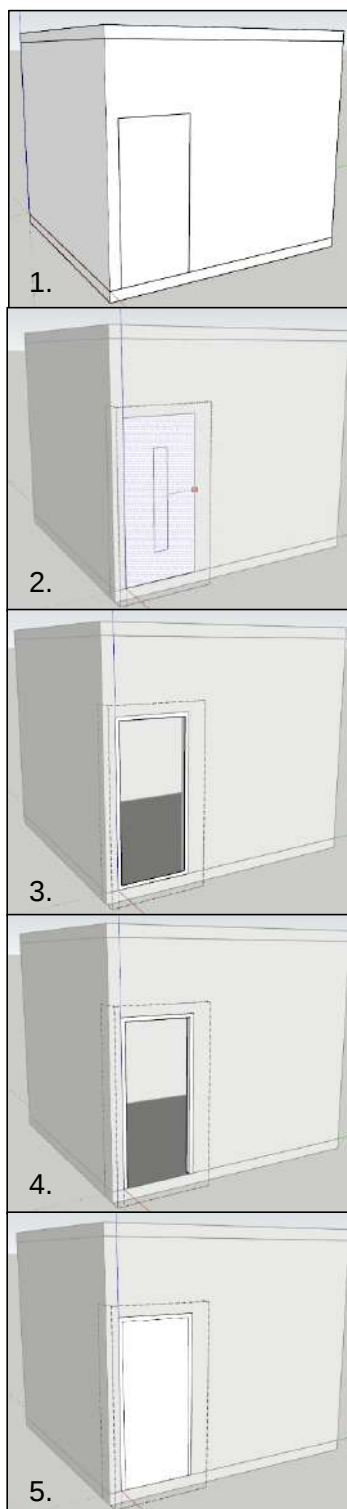
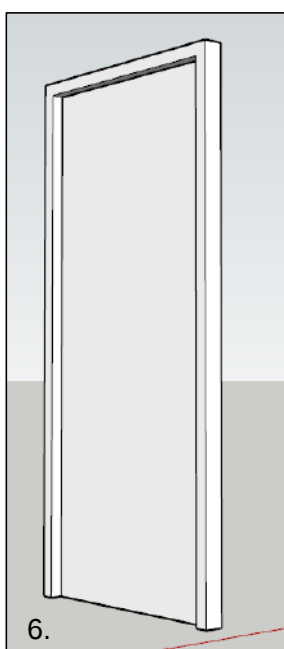
Create Ceiling or Floor:

1. Press **R** on the keyboard to create a rectangle
2. Click once on the first corner of the room
3. Click on the second corner of the room
4. Double click on the face
5. Right click on the face and make it a group
6. Double click on the face
7. Press **P** on the keyboard to activate push and pull tool (to give thickness to the ceiling or floor)
8. Click once on the face and drag upwards or downwards
9. Type the desired thickness, say, 6"
10. Press enter Now to copy the ceiling to floor
11. Press **M** on your keyboard to activate the move tool
12. Click on the corner of the group
13. Drag it down the desired point
14. Click once



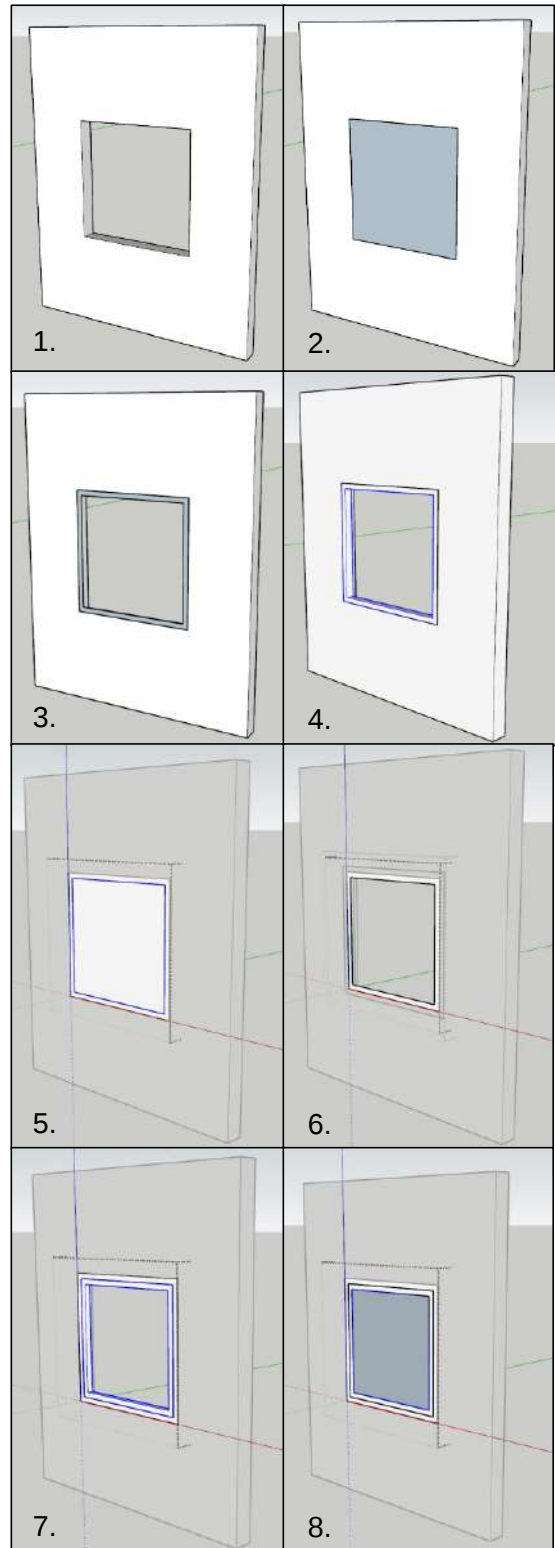
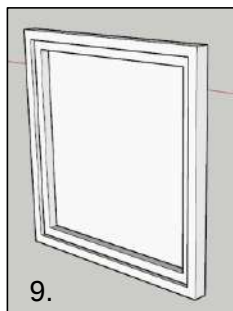
Create Door:

1. Press **R** on the keyboard to create a rectangle
2. Click once on the first corner of the door
3. Click on the second corner of the door
4. Double click on the face
5. Right click on the face and make it a group
6. Double click on the face
7. Press **F** on the keyboard
8. Type 2" and press enter to create frame of the door
9. Type **M** on the keyboard and move bottom line downwards
10. Press Top arrow key to snap it in blue axis
11. Select the middle face of the door
12. Right click and erase it
13. To give thickness to the frame, press **P** on the keyboard
14. Drag it outwards and give a thickness of 3" and press enter To create a shutter of the door,
15. Press **R** on the keyboard to create a rectangle
16. Click once on the first corner of the door frame
17. Click on the second corner of the door frame
18. Double click on the face
19. Right click on the face and make it a group
20. Double click on the face
21. Press **P** on the keyboard
22. Drag it outwards and give a thickness of 1" and press enter.



Create Window:

1. Press **R** on the keyboard to create a rectangle
2. Click once on the first corner of the window
3. Click on the second corner of the window
4. Double click on the face
5. Right click on the face and make it a group
6. Double click on the face
7. Press **F** on the keyboard
8. Type 2" and press enter to create frame of the window
9. Select the middle face of the door
10. Right click and erase it
11. To give thickness to the frame, press **P** on the keyboard
12. Drag it outwards and give a thickness of 3" and press enter To create a shutter of the window,
13. Press **R** on the keyboard to create a rectangle
14. Click once on the first corner of the window frame
15. Click on the second corner of the window frame
16. Double click on the face
17. Right click on the face and make it a group
18. Double click on the face
19. Press **F** on the keyboard
20. Type 3" and press enter to create frame of the window shutter
21. Select the middle face of the door
22. Right click and erase it
23. To give thickness to the window shutter frame, press **P** on the keyboard
24. Drag it outwards and give a thickness of 1" and press enter To create the glass.
25. Press **R** on the keyboard to create a rectangle
26. Click once on the first corner of the window shutter frame
27. Click on the second corner of the window shutter frame
28. Double click on the face
29. Right click on the face and make it a group.



Create Study Table:

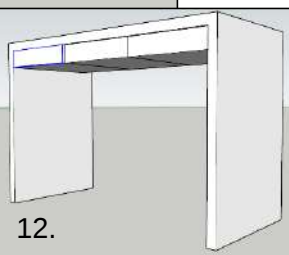
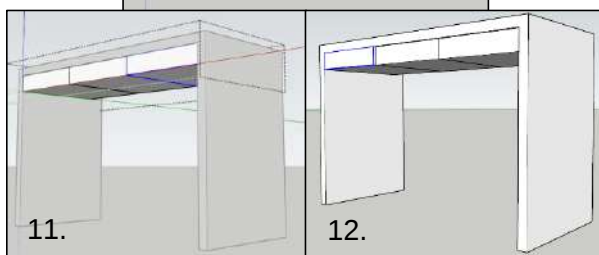
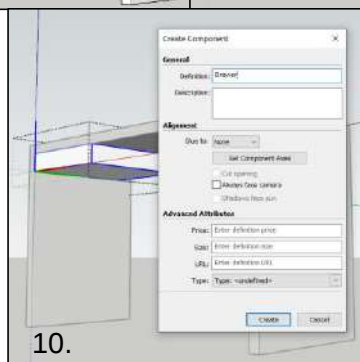
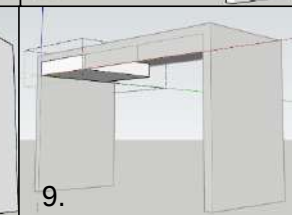
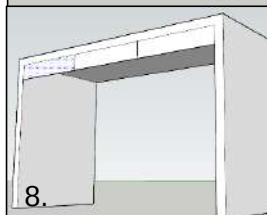
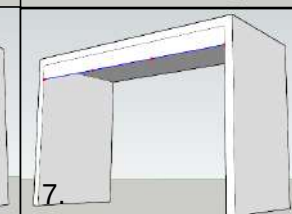
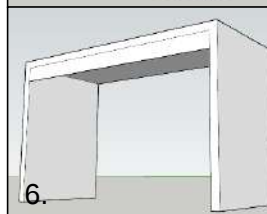
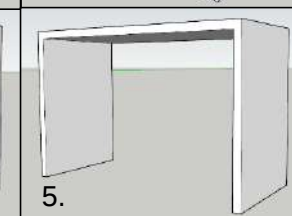
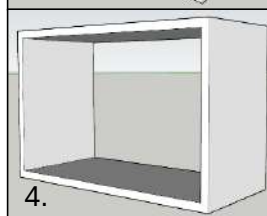
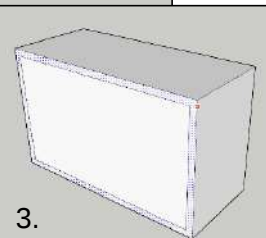
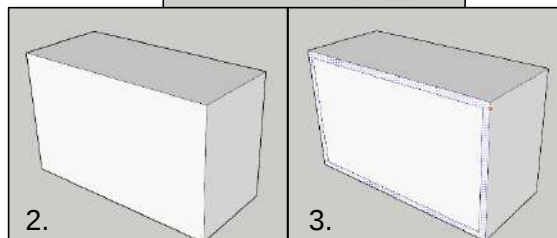
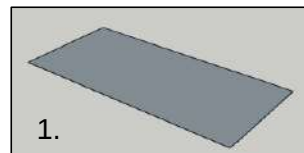
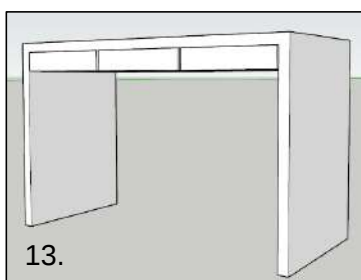
1. Press **R** on the keyboard to create a rectangle
2. Click once on the first corner of the floor
3. Type the dimensions, say, 4'x1'9" and press enter
4. Double click on the face
5. Right click on the face and make it a group
6. Double click on the group and press **P** on the keyboard to activate push and pull tool
7. Pull it and type 2'6" and press enter
8. Click on the front face of the group
9. Press **F** on the keyboard, and give an offset of 1.5"
10. Click on the inner face drag it backwards till the end (Picture 4)
11. Click on the bottom face and using push pull tool, drag it downwards till the end (Picture 5)

For creating drawers,

12. Press **R** on the keyboard to create a rectangle for drawers
13. Right click on the bottom line and click divide (to divide the line into equal parts) (Picture 7)
14. Hover over right and left, it will show you in how many parts you want to divide, click when you get the desired number of division
15. Press **L** on the keyboard to activate line tool
16. Draw line to divide the rectangle into parts
17. Double click on the first drawer section, right click and make it a group
18. Double click and press **P** on the keyboard for push and pull tool
19. Drag the face backwards, to create a drawer
20. Double click and right click and make it a component
21. Press **M** on the keyboard and copy it to create other drawers. (type "x2" to create 2 drawers)

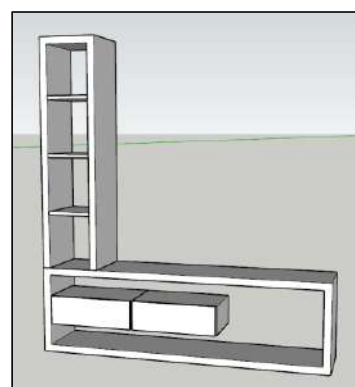
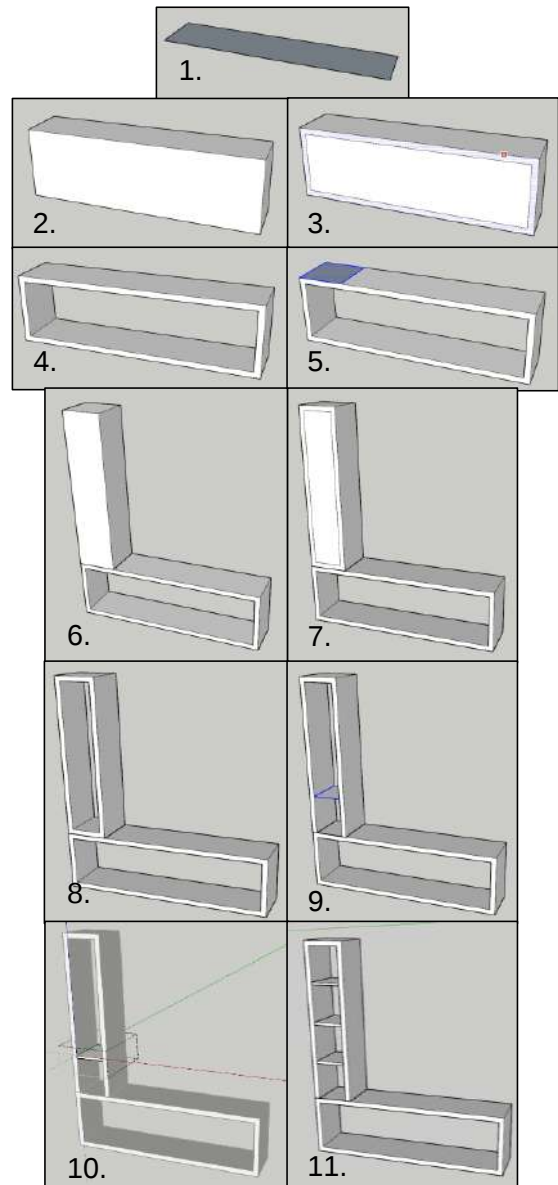
For creating drawer facia,

22. Press **R** on the keyboard to create a rectangle for drawers facia
23. Double click, right click and make it a group
24. Press **P** on the keyboard for push/pull tool, and give it a thickness of, say, 1"
25. Double click, right click and make it a component
26. Press **M** on the keyboard and copy it to create other drawers facia. (type "x2" to create 2 drawers facia)



Create TV Unit:

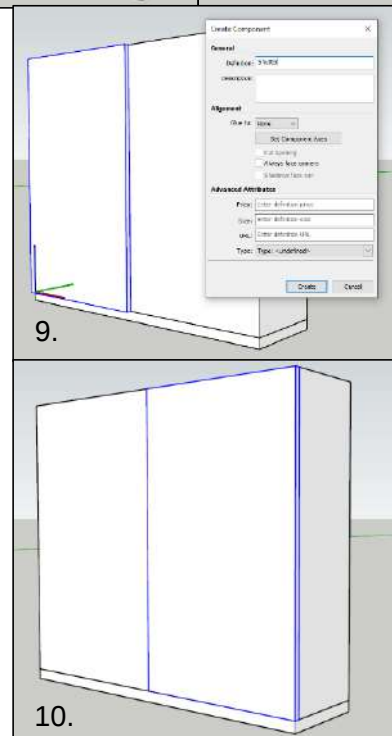
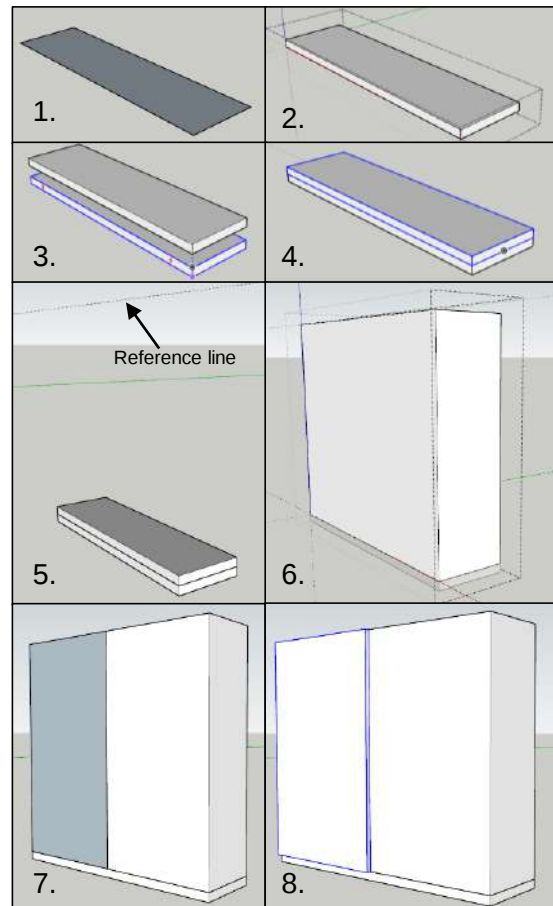
1. Press **R** on the keyboard to create a rectangle
2. Click once on the first corner of the floor
3. Type the dimensions, say, 5'x1' and press enter
4. Double click on the face
5. Right click on the face and make it a group
6. Double click on the group and press **P** on the keyboard to activate push and pull tool
7. Pull it and type 1'6" height and press enter
8. Click on the front face of the group
9. Press **F** on the keyboard, and give an offset of 1.5"
10. Click on the inner face drag it backwards till the end using push/pull tool For creating shelves,
11. Press **R** on the keyboard to create a rectangle (Picture 5)
12. Press **L** on t
13. Double click and press **P** on the keyboard for push and pull tool
14. Drag the face upwards, to create a unit
15. Press **F** on the keyboard, and give an offset of 1.5"
16. Click on the inner face drag it backwards till the end using push/pull tool
17. Click on the bottom face and push is downwards, using push/pull tool
18. Double click on the bottom face, right click and make it a group
19. Press **M** on the keyboard and move the group upward and type a desired distance, say, 1', and press enter (this is our first shelf) (Picture 9)
20. Using push/pull tool, give thickness to the shelf of, say, 0.75"
21. Press **M** on the keyboard and press Ctrl to make copies of the shelf, type a desired distance and press enter (For multiple copies type "x3", and press enter) (Picture 11) For creating Drawers, follow the same steps that we covered in "Create Study Table" topic.



12.

Create Wardrobe:

1. Press **R** on the keyboard to create a rectangle
2. Click once on the first corner of the floor
3. Type the dimensions, say, 8'x2' and press enter
4. Double click on the face
5. Right click on the face and make it a group
6. Double click on the group and press **P** on the keyboard to activate push and pull tool
7. Pull it and type 3", for skirting, and press enter
8. Now we will copy this group to create our wardrobe
9. Press **M** on the keyboard and press Ctrl
10. Drag the bottom corner point and place it to the corner top point and click
11. Create a reference line for the height of the wardrobe
12. Press **T** on the keyboard
13. Click on the floor line and drag it and type the height, say 7', and click enter
14. Type **P** on the keyboard and pull the top face of the group till the reference line and click To create shutter for the wardrobe,
15. Press **R** on the keyboard to create a rectangle
16. Click once on the first corner of the wardrobe
17. Click on the mid point of the wardrobe
18. Double click on the face
19. Right click on the face and make it a group
20. Right click and make it a component (if we will have to make any changes in the first shutter, the changes will be done automatically to the other shutters as well)
21. Type **M** on the keyboard and copy the shutter to create another one
22. To give gaps between the shutters, double click to go into the group
23. Type **P** on the keyboard and push 0.25" from both the sides of the shutter.



Note: A detailed explanation of how to create a wardrobe with a dressing table will be explained in the video lecture.

SKETCHUP

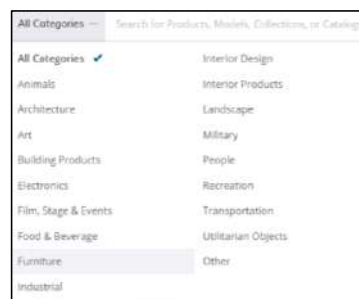
3D Warehouse:

3D Warehouse is a website of already-made 3D models that's works seamlessly with SketchUp. It is an online community for anyone who creates or uses 3D models.

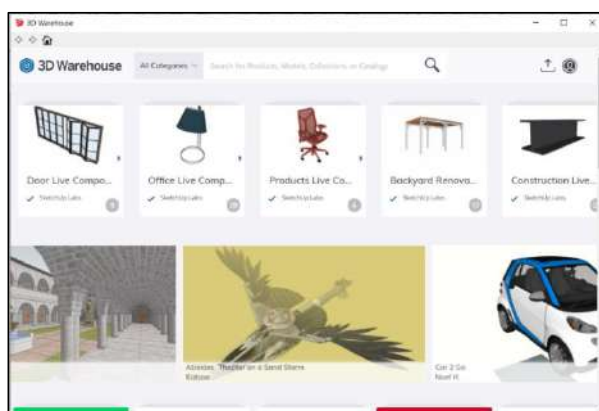
To import a file from the 3D Warehouse,
Window > 3D Warehouse

Search for the file you want and click on download. You'll get a variety of categories to choose from including models related to furniture, architecture, accessories, etc.

After importing the model, you can modify them according your design.



Categories in 3D Warehouse



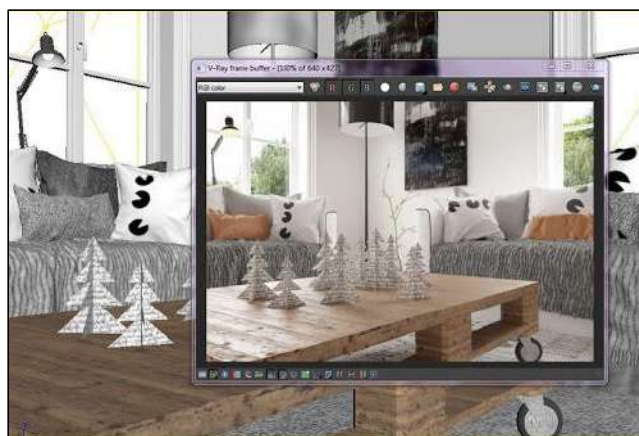
3D Warehouse dialog box

V-Ray for SketchUp:

V-Ray is a 3D rendering software that combines real-time and photorealistic rendering. It gives a variety of options to move around your model, apply materials, set up lights and cameras, and make your model look lively.

For any project, you can see exactly how it will look like. You can visualize your projects from start to end.

The abundance of options and settings, vast material library and unique interface make it easy to understand the whole process of creating the model.



V-ray for SketchUp