



**Sketch Up is software that you can use to create 3D models of anything you like. Create 3D images and share them with the world.**

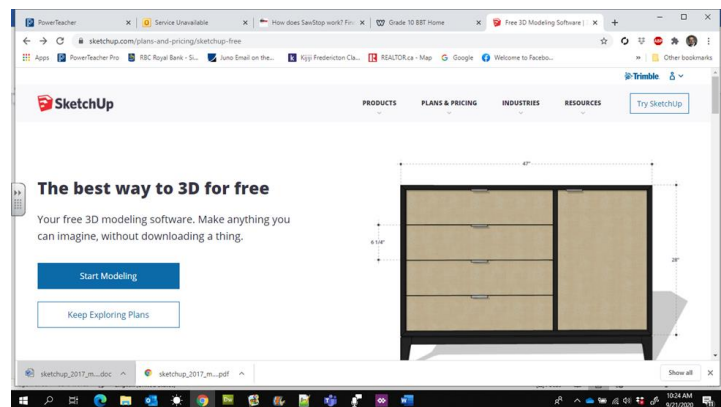
**It's almost as easy as the Google people say... watch this:**

**<http://www.youtube.com/watch?v=5PLSIHbQ-bc>**

1. Start Sketch Up – GO TO

<https://www.sketchup.com/plans-and-pricing/sketchup-free>

2. Choose “START MODELING”

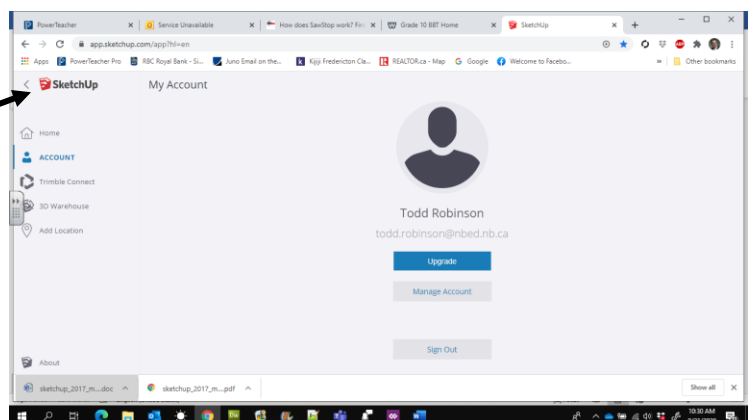


3. You will create a new account using your student email.

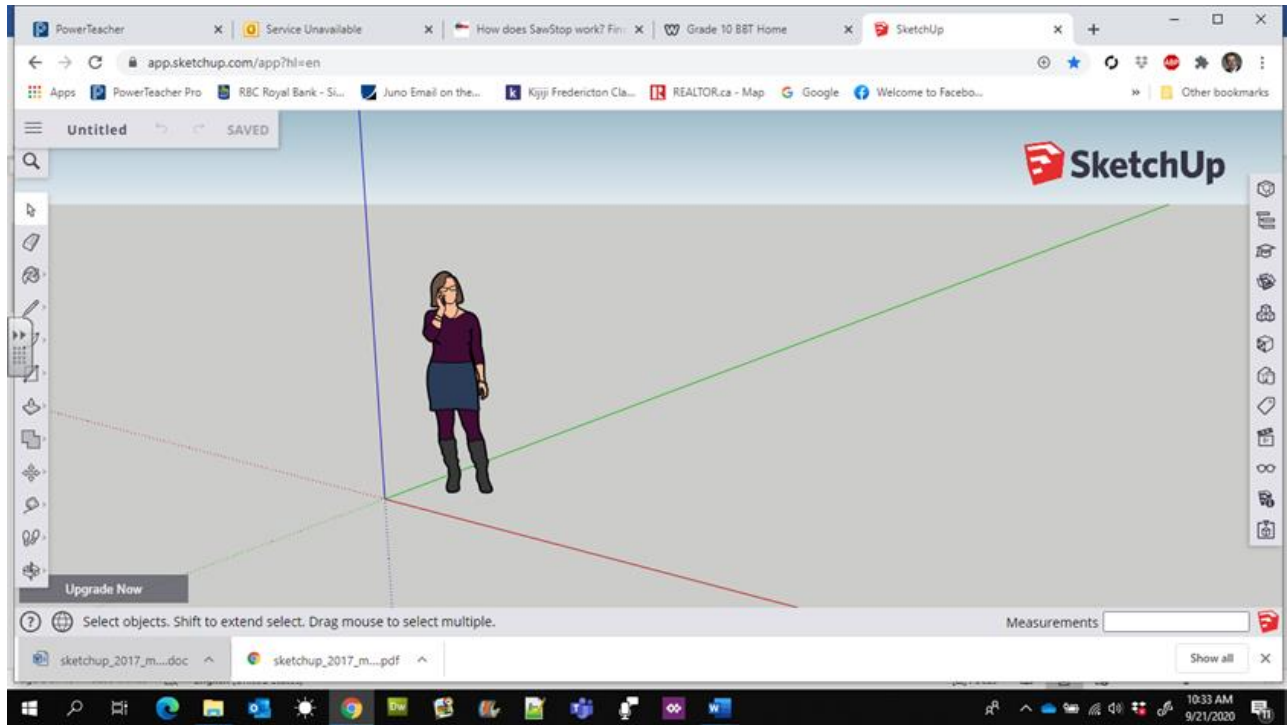
[USERNAME@nbss.nbed.nb.ca](mailto:USERNAME@nbss.nbed.nb.ca)

4. This will direct you to go to your MS office 365, then UN and PW to log into Office- go to Outlook and check your student email. Click YELLOW activate button.

5. Then go to “Sketchup”



This will be our HOME SCREEN

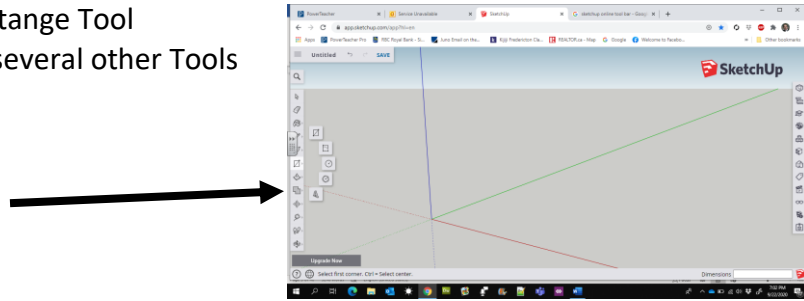


## Activity 1: The Tools

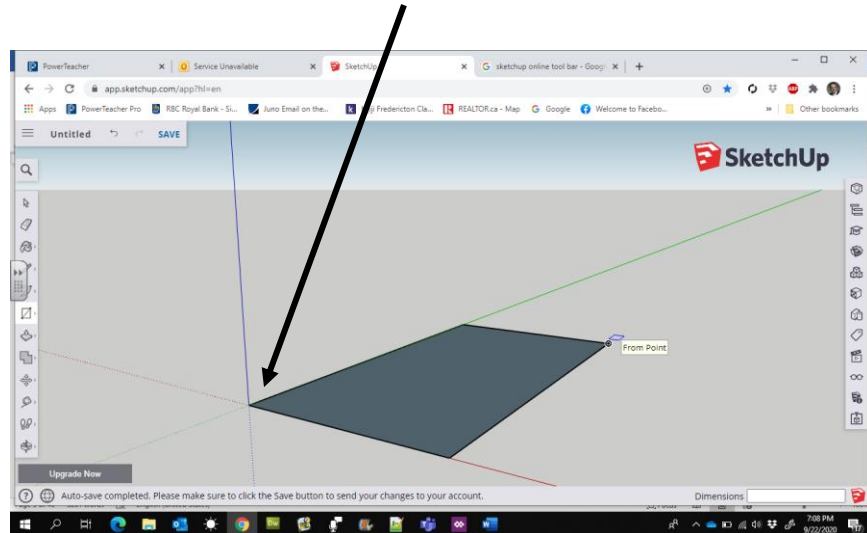
**Let's work with a few of the tools...**

The 3D window will appear with a person in it. He or she is there to give your project size perspective. Most times you will want to right click on it and "Erase".

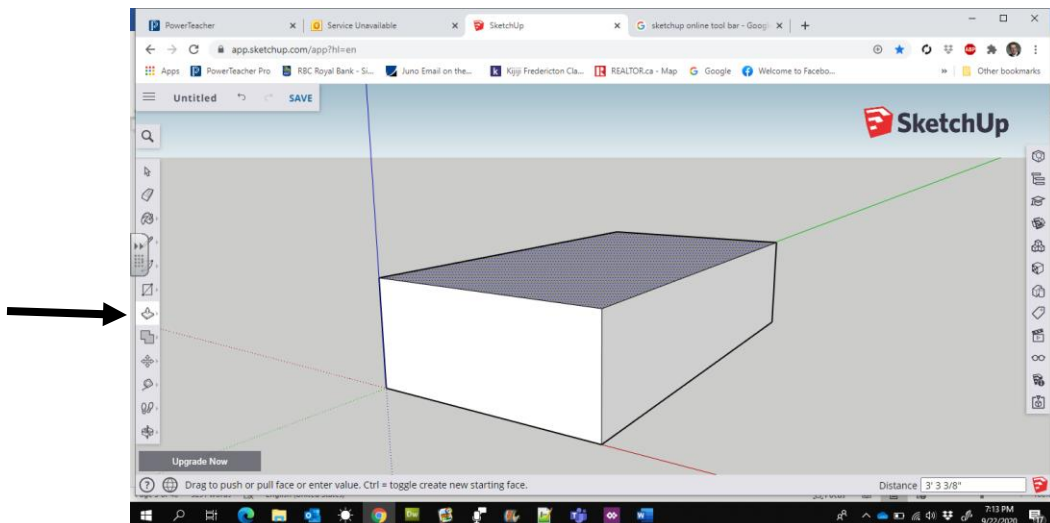
1. Click on the Rectangle Tool and expand its several other Tools



Draw a rectangle, begin at the yellow dot at the intersection of the RED BLUE and GREEN- This is called the “Origin” Click, hold and drag to form the shape.



2. Next Click the “Push Pull” tool, hover over the rectangle until you see the dots form, this means Sketchup recognizes the object as a solid and can make it 3D.



















Here are three tools that we will start with:



3. Click on the **Orbit tool** – click, hold and drag anywhere on the 3D area (around the person). See how it changes your perspective? Can you change the perspective so you can see the person from below (just like he is standing on a sheet of glass)? Google SketchUp Module
4. Click the **Pan tool** – click, hold and drag anywhere on the 3D area (around the person). This tool move an object to where you want it on screen.
5. Click on the **Zoom Tool** – click, hold and drag up and down on the 3D area. This tool helps you zoom in and out from your object. What do you think the other zoom icon (**the zoom extends icon**) will do?

Here are descriptions for several more common Sketch Up Tools

Visual	Tool Name & Description	Visual	Tool Name & Description
	Select - Use this tool to "select" the parts of your model you want to work with.		3D Text - Use this tool to create 3 dimensional geometry from text.
	Paint Bucket - Use this tool to assign materials and colors to pieces of your model.		Push/Pull - Use this tool to push and pull surfaces in your model, allowing you to add or subtract volume from the pieces in your model.
	Eraser - Use this tool to delete entities. The Eraser tool can also be used to hide and soften edges.		Rotate - Use this tool to rotate, stretch, distort, or copy entities along a rounded path.
	Rectangle - Use this tool to draw rectangular pieces in your model.		Follow Me - Use this tool to duplicate the profile of a face along a path.
	Circle - Use this tool to draw circles in your model.		Scale - Use this tool to resize and stretch pieces in your model.
	Line - Use this tool to draw edges or lines in your model.		Tape Measure - Use this tool to measure distances, create guide lines or points, or scale a model.
	Freehand - Use this tool to draw irregular hand-drawn lines in the form of curves.		Offset - Use this tool to create copies of lines and faces at a uniform distance from the originals.
	Arc - Use this tool to draw arcs in your model.		Move - Use this tool to move, stretch and copy pieces of your model. This tool can also be used to rotate components and groups.

## Activity 2: The Line & Shape Tools

**Let' Build Something...** Start by using the orbit to get the vertical (blue) 3D perspective line straight up and down (this will save you a lot of issues when you start to draw)

1. **Click the Draw Icon** – Draw a line by clicking once and then move in any direction and click again. If your line is vertical with the 3D perspective, it will appear blue. If your line



follows the depth perspective it will turn green. If your line follows the width perspective it will turn red. This is will be very useful when drawing objects later on.

2. **Draw 4 lines that make up a rectangle.** Note that when you are drawing the 3<sup>rd</sup> line, the application will give you a dotted blue line when you are lined up with the start of parallel line. This is handy so you'll know when to stop the line so that the last line will be in line with the first point.



When the last line connects with the first point, the object will fill in. You can delete the fill by using the pointer tool and clicking the fill and hitting the delete key.



3. **Try the Circle tool, the rectangle tool, and the polygon tool.** You might want to change the perspective with the orbit tool so it's more like drawing from the top perspective looking down. Try drawing rectangles from different perspectives.

**TIP:** Click on the **Window menu > Instructor** to get helpful information on how to use each tool

## Activity 3: Push Pull Tools

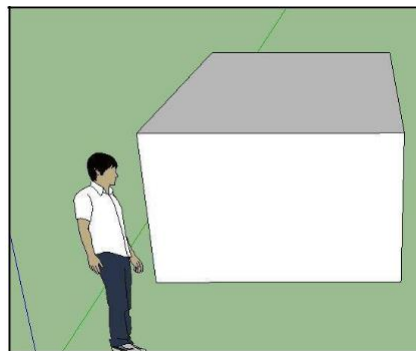
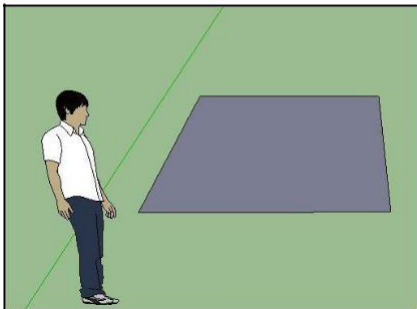
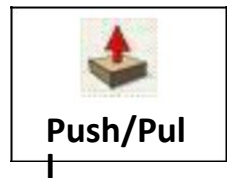
The Push/Pull Tool is one of the nicest and easiest features of Sketchup, so we should learn a little more about the particulars of this fine tool.

Try this video or Search “Sketchup Push Pull” on Youtube.

<https://www.youtube.com/watch?v=xTzh4KGuXzE>

Flat shapes were not what SketchUp was design to do. It was designed to make objects 3D, so let's do that...

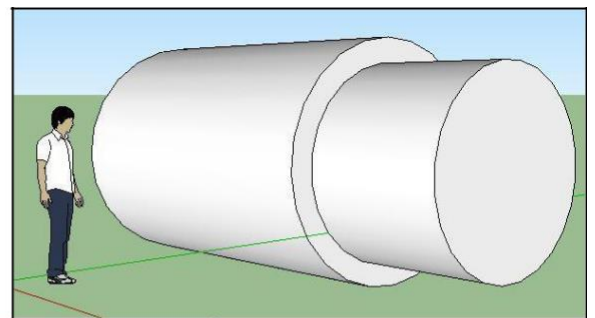
1. We can turn a simple square, into a cube. Select the Push/Pull Tool icon and click the top of the object and drag upward.



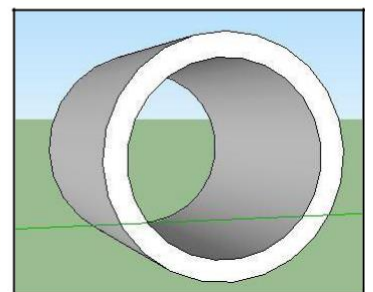
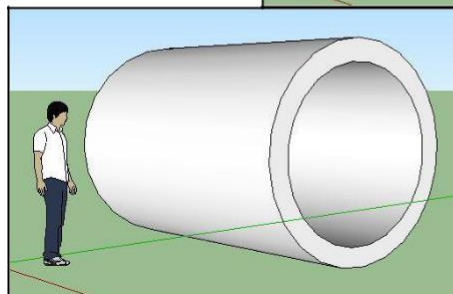
**TIP:** Hold down the Ctrl Key as you use the Push/Pull tool to create a new object from the old one – Give it a try!

You can also, use the Push/Pull icon to make the object deeper – click the front of the object and drag toward you.

2. Draw a circle and use the push pull tool to make it into a cylinder. Then create a smaller circle on the end and pull it out.



3. Let do the opposite this



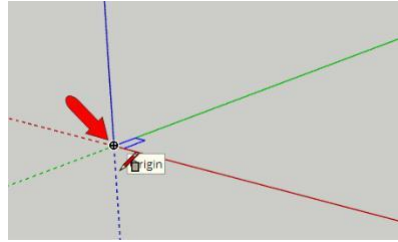
time. Create the first cylinder but this time push the second circle in instead of pulling it out. You created a pipe.

Change the perspective and see if the hole in the pipe goes right through (if not, use the Push/Pull tool to push it through the rest of the way).

## Activity 4: Building a Structure – Camp!

Let's build a small camp.

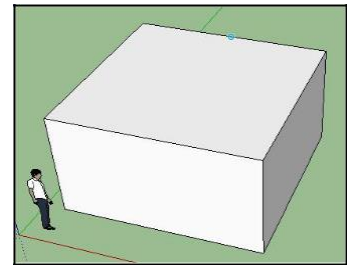
Unlike what you see in the Pic to the right, you should start a drawing of this type at the origin.



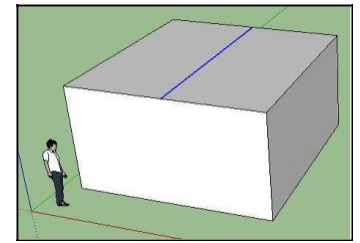
1. Create a cube shape from what you already learned.

**Make the base 8m x 8m**

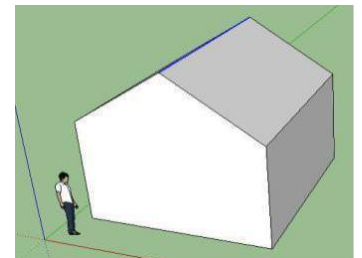
**Make the height 2.75 meters** (see the bottom right corner of the 3D work area for the measurements).



2. Draw a line from one mid-point to the other (run your mouse along the line to find the midpoint), then **use the pointer to select the line**. Use the **Move Tool** to move the roof up (make sure the line you extend up is blue indicating that you are going straight up).



It's a very good practice to not try to move a line and try to "land the number" in the "Measurement" box to the bottom right- but rather first click the tool, then the object then type the number- It will go directly into the box, no need to click it w your mouse.





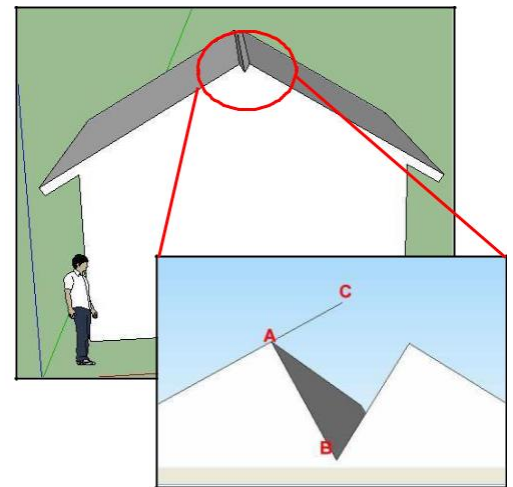
3. Give your roof some thickness so we can use the Push/Pull tool to give it

some eaves. Select the Push/Pull tool, raise the roof on one side by 0.15 meters. Then select the new edge (roof edge) and extend it 0.6 meters. (You can tell the area that will be pushed or pulled because it turns to a dotted blue pattern). Do the same for the other side of the roof.

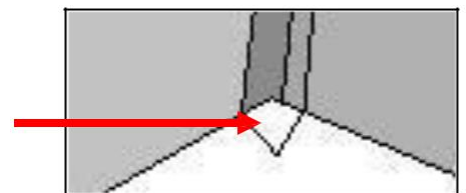
**TIP: Ctrl & Z is undo**  
I use it a lot!!

**Tip: Save your Work!**

4. Let's fill in the gap at the peak of the roof. Use your line tool to click at Point **A** (as illustrated), then move your pointer down to Point **B** but **don't click** (this will create a ghosted line indicating where the line you are drawing should end), now move up to Point **C** and click when you see the dotted blue line come up from Point **B**. Now you can move from Point **C** to the other side of the roof and the gap is now filled in... sort of...



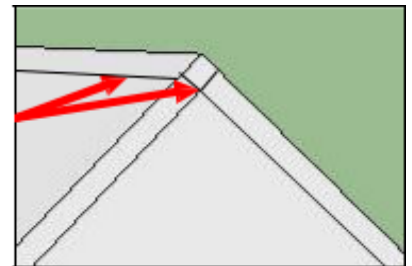
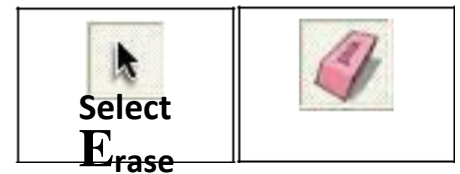
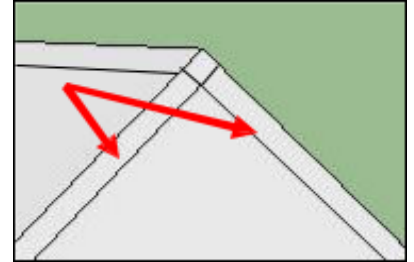
5. You see from the picture that we did fill in the shape of the peak but we now need to use the Push/Pull tool to expand it the length of the roof.



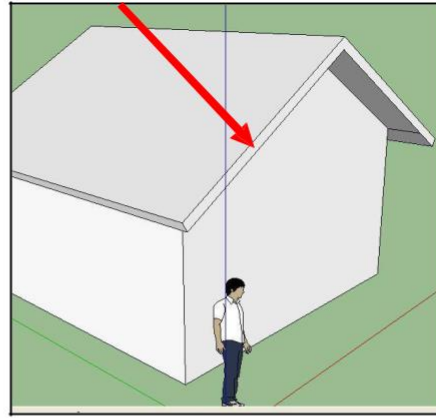
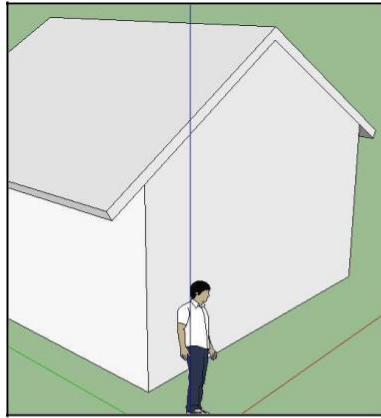
6. Define the thickness of the roof by drawing a **line** from the peak to the end of the roof. Do this from the peak to the other side too.

7. It's important that we erase the extra lines with the **Erase Tool**. Click on the lines with the **Select Tool** and erase the two lines on the roof and the two lines on the roof face (fascia board) that don't belong.

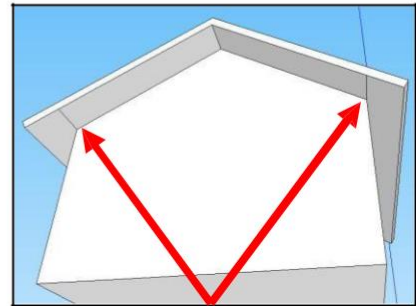
**Tip: Save your Work!**



8. Let's give some overhang to the front and back of the roof. Use the **Push/Pull Tool** to expand the roof. (Don't forget the overhang in back)

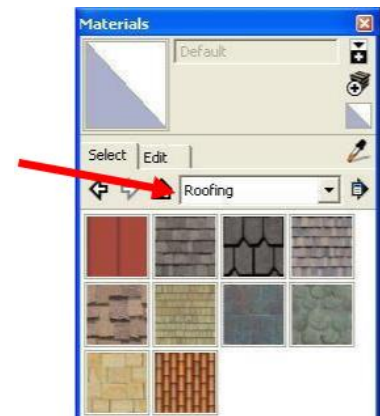


9. There are a couple more lines to **erase** to clean everything up. Rotate around the underside of the roof to find the lines. Are there any others?



10. Let's shingle the roof! Click **Windows Menu > Materials** > Choose "**Roofing**" in the materials box.

- Click on the type of shingle you want.
- Click on the surface you want shingled (don't forget to do both sides of the roof).



11. See if you can do the same for the siding. Choose "**brick and cladding**" in the material box. Side all four sides of the building.



12. Take a look on the underside by rotating the perspective. We can see what's in the building by using the select tool to click on the bottom of the building. Hit **delete** on your keyboard and the floor will disappear. Now you can see what's inside.



**Assignment 4:** Print the completed activity

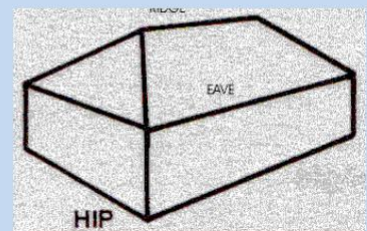
**Tip: Save your Work!**

**TIP: Ctrl & Z is undo**

### Activity 4 Challenge: (Bonus Activity)

In this activity, you designed a basic Gable roof. A Hip Roof is a more classy design. Use the video to assist you in make a building with a Hip Roof.

Try this video or Search "Sketchup hip roof" on Youtube:  
<http://ca.youtube.com/watch?v= ALbktAE9C8>

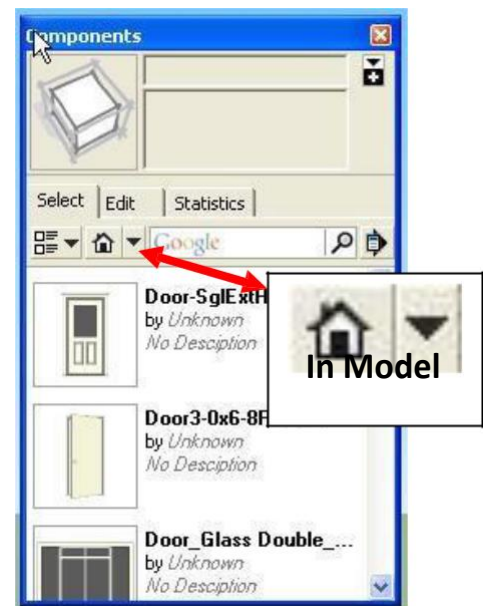


## Activity 5: Door & Windows

Our building needs a door and some windows. Sketchup comes with some basic components that are easy to install. Other components can be obtained over the internet or designed manually.

1. Click the **Windows Menu** > choose **Components**. The components window appears. Drag the component that you want to your building.

2. There are a limited number of components available in the library. You can click on the arrow next to the “**In Model**” icon and choose from the list of categories. This brings up other components that are on the internet that have been built by other designers. Click on the component to download it. Some will work well and others not so well. Try a couple new components.



3. Let's get some more components. Click **File > 3D Warehouse > Get Models**. This will take you to the Google online warehouse where you can download even more components. Give it a try.

**Tip: Save your Work!**

4. Once you've clicked to lock a component in place, you'll need the **Move icon** to relocate it.



5. One more tool... Click the **Dimension** tool and insert the floor dimensions of your building. Click at the corner, then at the other corner of the same wall, and pull away from the building and click one more time.



## Activity 5: Assignment Recap

Your building should have all the building basics plus the things we learned in each activity:

1. -A Roof- basic pitch or Hip Roof
2. -Shingled or other material roof
3. -Siding on walls at least 1 Door & 2 windows
4. -Overhanging roof on all sides
5. -Roof fascia board (thickness to the -  
roof) All unnecessary lines erased
6. -Marked dimensions of the floor area

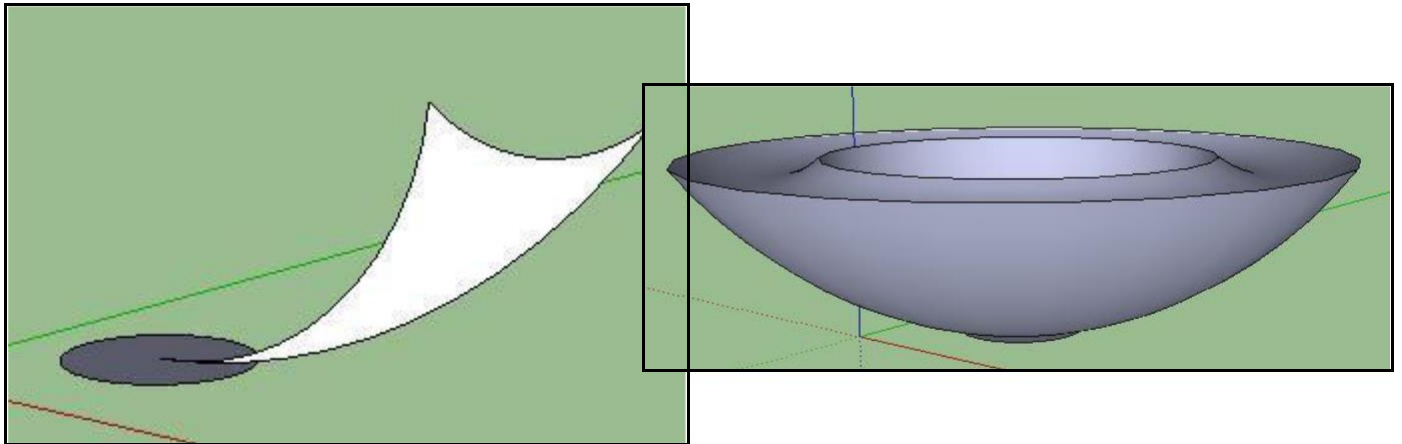




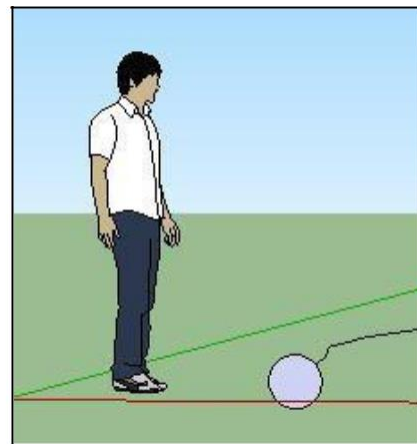
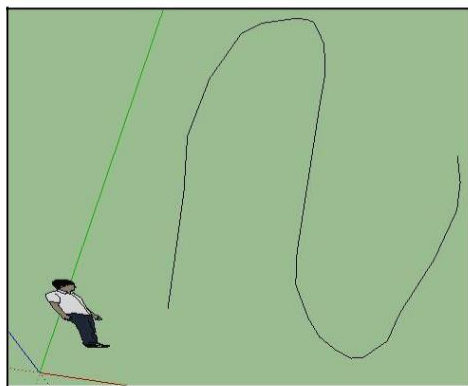


## Activity 6 Follow Me Tool

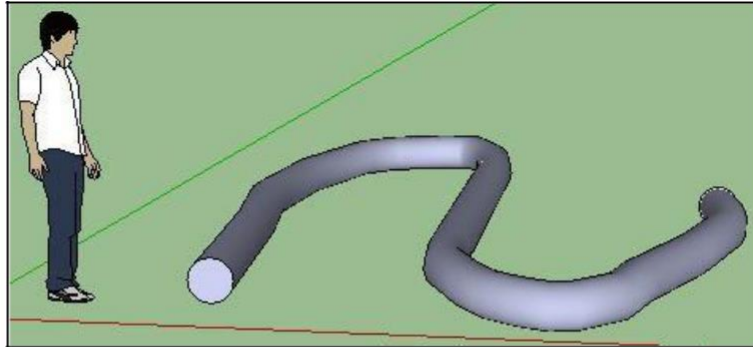
The **Follow Me Tool** allows you to create very interesting 3D shapes from a 2D image by conforming it to a path. This simple shape is created around the circle (path) using the **Follow Me Tool**.



1. Let's create a few objects. Use the orbit tool to change your perspective as if you were looking down from above.
2. Then, use the **Freehand Tool** to draw a squiggly line.
3. Next, Orbit back to the regular perspective (as if you were looking directly at the character). Use the **Circle Tool** to create a small circle towards the end of the path that you drew.



4. Use the **Select Tool** to select the line that you created. Then use the **Follow Me Tool** to click on the circle that you drew. The result is a long snake-like hose.



**TIP:** If that didn't work then you probably didn't design the path and the object perpendicular to each other. Use the Orbit Tool to change your perspective when completing each of the two steps.

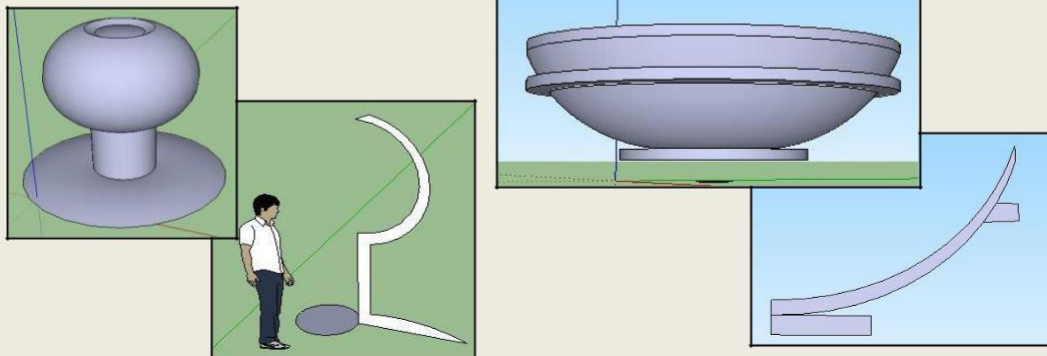
## Activity 6A: Assignment

Use the **Arc Tool**, and other tools, to create a shape like you saw at the beginning of this activity. Then draw a circle as the path. **Create 2 interesting shapes and save them.** Here are some samples:

Google has a video that shows you all about arcs (or go to Youtube.com and search

Google Sketchup Arcs):

[http://sketchup.google.com/intl/en/training/videos/new\\_to\\_gsu.html](http://sketchup.google.com/intl/en/training/videos/new_to_gsu.html)



## Activity 6B: Challenge 1 (optional)

Model one or more chess pieces using the **Follow Me** tool. (Hint: The pond is the easiest!) Here is a video to help you:

<http://www.youtube.com/watch?v=mMHKn5ziDeY>



## Activity 7 Lab: The Tape Measure Tool



The measuring tool does a lot more than you would expect. It...

1. Measures edges and distances
2. It creates dashed lines that acts as guides to assist you in designing
3. It resizes individual and group objects

Watch the video that Google has available to learn more about the tape measure:

<http://www.youtube.com/watch?v=cv7fw2lHkMQ&feature=channel>

**If your instructor is available, show him/her quickly that you mastered each of the three skills listed above so you receive credit for this lab activity.**

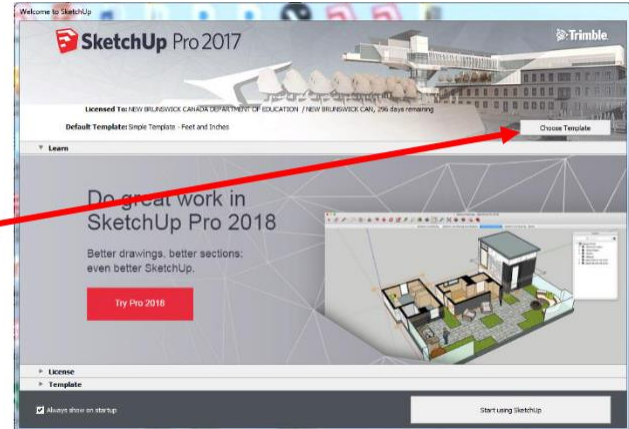
## Activity 8: Floor Plans

In this activity, we will create a floor plan for a small House. The house will have a bedroom, a bathroom, and an open room that serves as kitchen and living room.

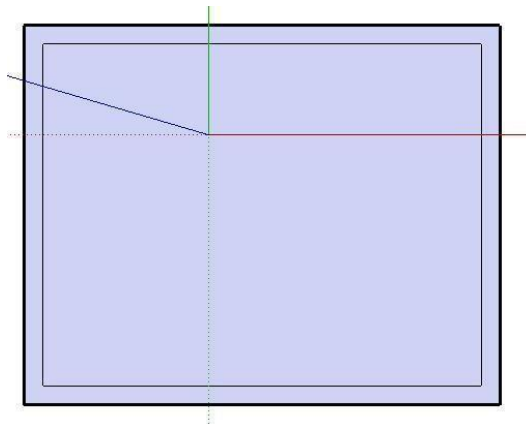
1. Up until now we have been working in the “Simple – meters” template. Often, construction is measured in Imperial (Feet and inches), so let’s change templates.

**Help Menu > Welcome to Sketchup.**

Click the “**Choose Template**” icon or the **Templates Tab** and choose “**Plan View – Feet & Inches**”. You will work starting from the top, looking down.



2. Now, create a new document. **File > New.**
3. We’re going to create a floor plan of a house. Use the **Rectangle Tool** or the **Line Tool** to create a 30 foot by 20 foot floor area. Type in **30’, 20’** (just like I’ve typed it here with an apostrophe after the 25 to represent feet, and a comma between the two dimensions).
4. Let’s use a new tool; the **Offset Tool** to create the thickness of the outer walls. Using the **Offset Tool**, click on the edge of the floor area and move towards the center some. Now, type in 10” to indicate your wall will be 10 inches thick.



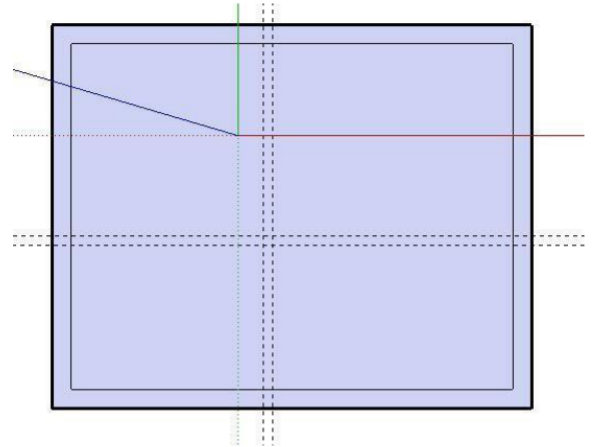
5. Select the **Tape Measure Tool** and measure 10 feet out from the inside of the left wall (towards the center of the floor plan). This will create a dotted guide line for you when you are making your inside walls. Make another one at 10' 6" (10 feet, 6 inches).



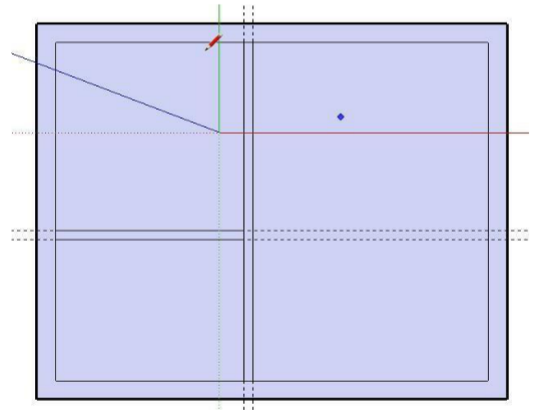
**Tape Measure**

This will allow for a 6 inch thick inside wall.

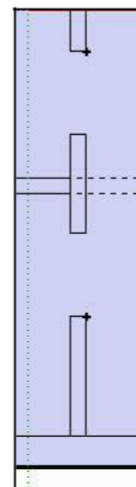
Do the same thing to create guidelines by measuring from the inside of the top wall, down 10 feet, and another guideline at 10' 6".



6. Use the Line Tool to create the inside walls for the bedroom and the bathroom as shown in the picture.

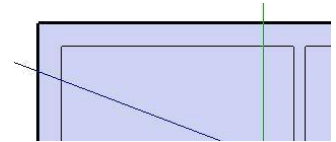
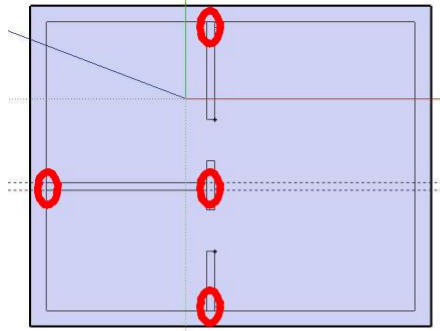


7. Create lines for the inside doors (about 3' wide or a little less). Then use the Erase Tool to delete the lines to allow for an door opening

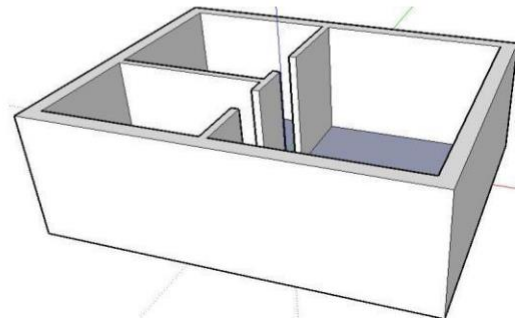


**Save your Work! Call it Floor Plan.**

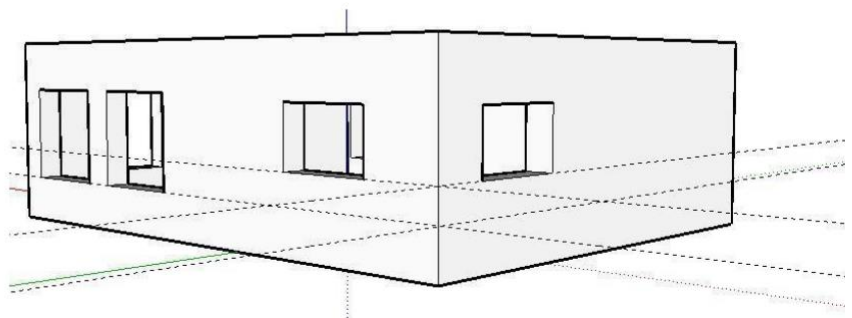
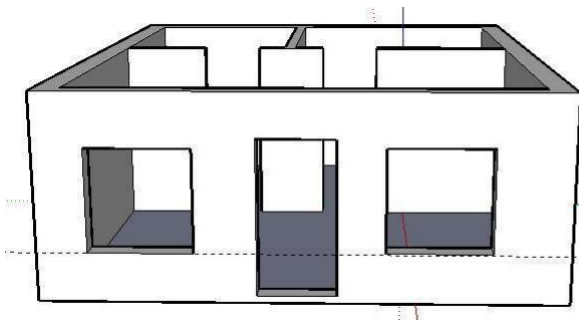
Next, use the **Erase Tool** to delete other lines to merge the walls as one object. (I erased my guidelines too)



8. Our building needs some height so use the **Push/Pull Tool** to raise the walls 8 feet. (Type in 8') You might want to use the **Orbit Tool** to rotate to a different perspective.



9. Use the rectangle tool to cut holes for windows and doors. Then use the Push/Pull Tool to make them opening. Note that the hole for the door should be a couple inches above the floor so that it will “push” to become an opening, otherwise, the door shape merges with the floor. Put in as many windows as the house needs. (Use guidelines to help you keep everything even).

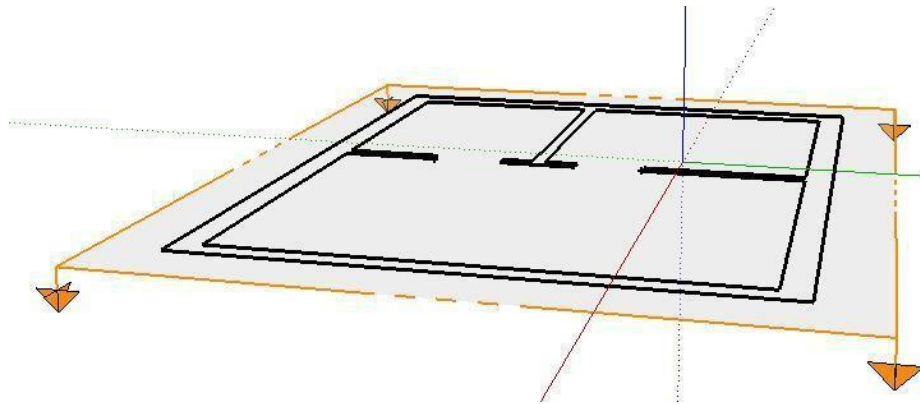


## Activity 9: Add Components and Look Around

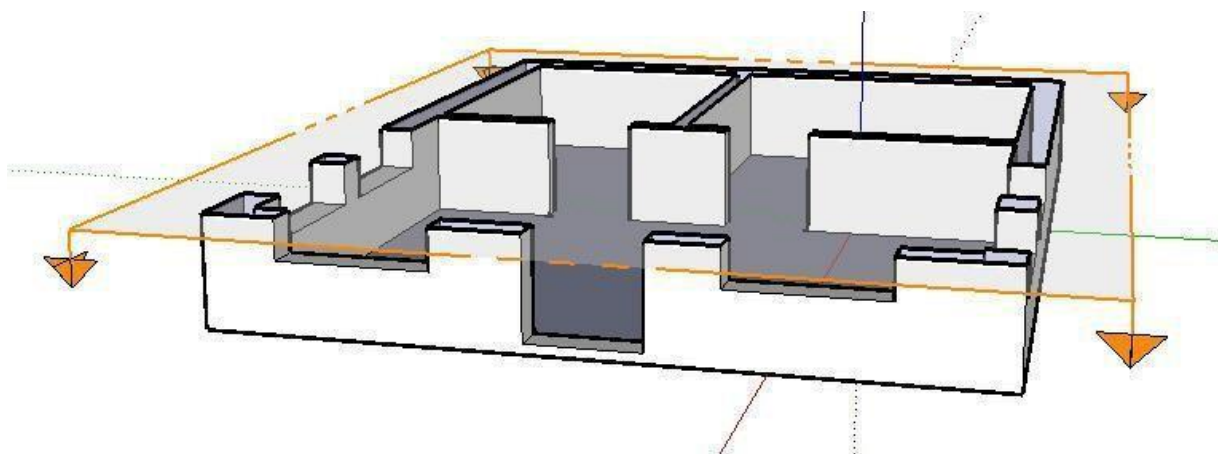
We need to add some items to the inside of our house like a bed, cupboards, a sink, toilet, kitchen table, etc.

It is very difficult to place items in the house because the walls interfere with our work. We want to shave the top part off our house so we can place the furniture more easily.

1. Click the **Tools Menu > Section Plane** and then click on the ground outside the building. This will cut our house down to just the floor plan.

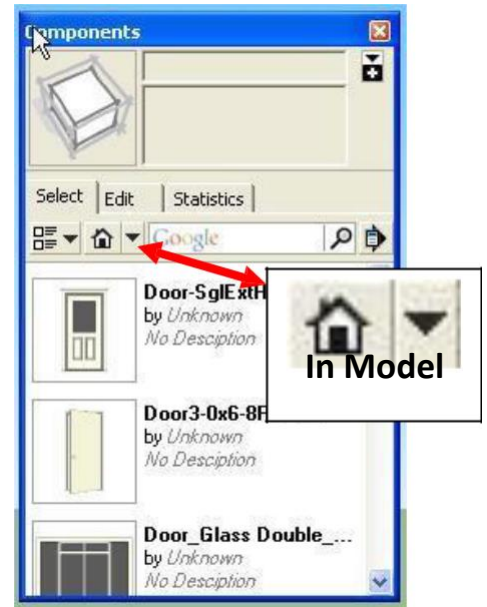


2. We want to see a little more of the walls so use the **Move Tool** to click on the walls and move them up just a little (see picture).

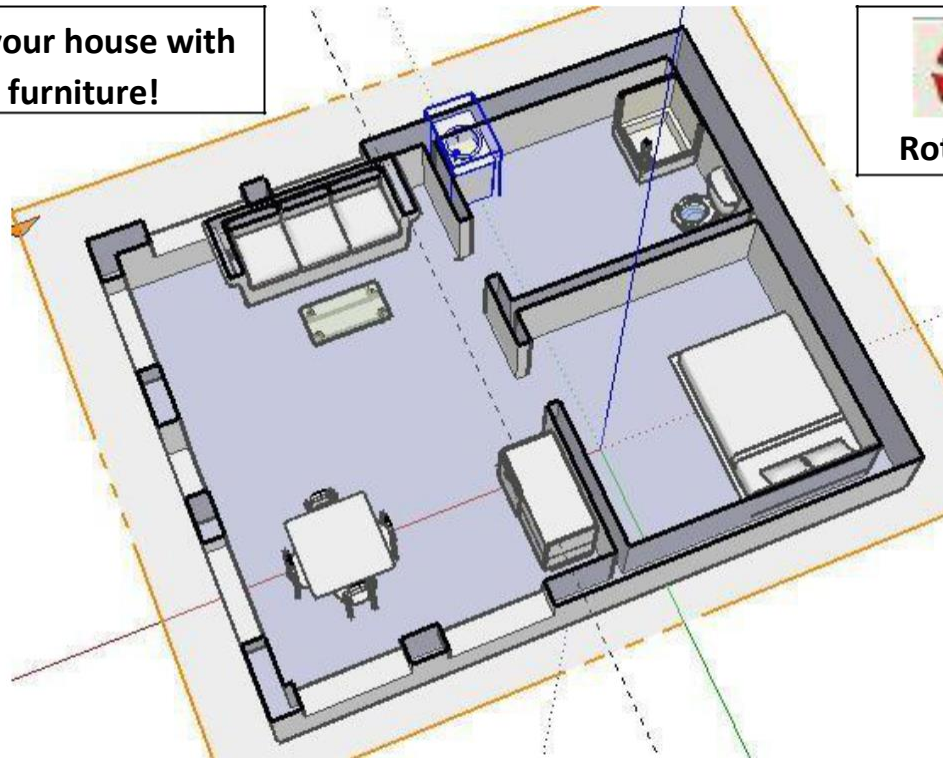




- Now, we can place the furniture. Click **Windows > Components**. Choose the Architecture components from the “**In Model**” arrow. If you can’t find a component you need in the library, type the item name in the search location.
- When the items appear, they may be facing the wrong way. Select the item with the **Selection Tool**, then use the **Rotation Tool** and click on the item once in the location that you want to rotate, then move away from the object a little and click again, then the object will rotate.



**Fill your house with furniture!**



**Rotation**

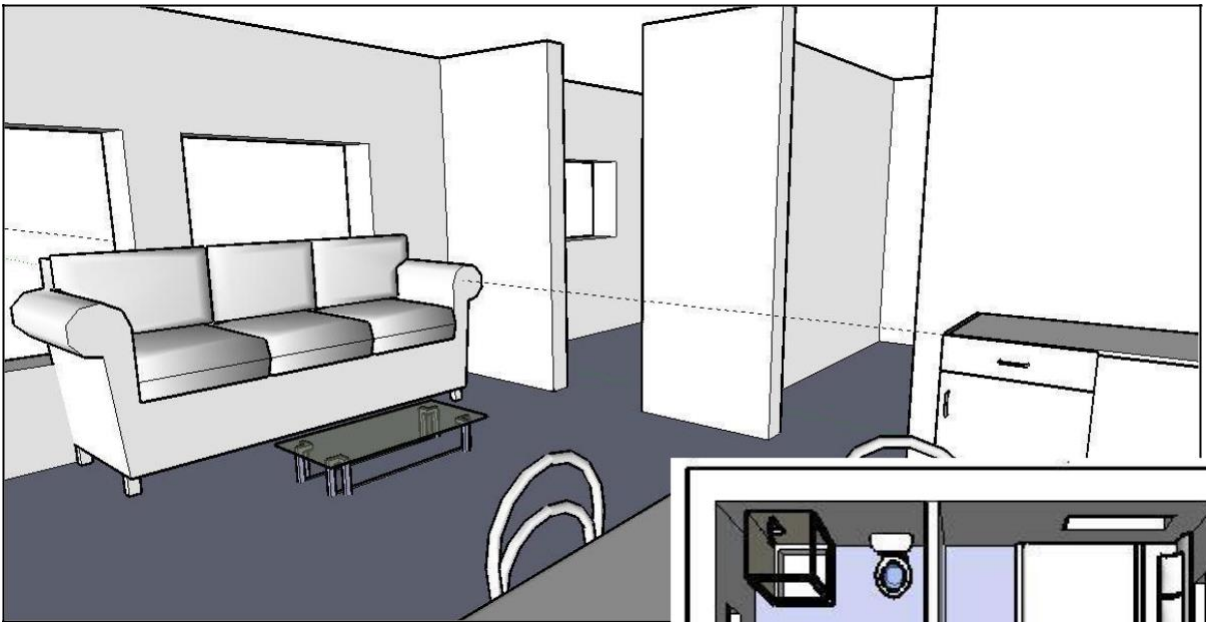
- Click the View Menu to un-check the Section Plane and the Section Cuts. This will show you how your design will really look.



6. Take a look around! Zoom in so you are right inside the house. Click the **Look Around Tool**. Now, click and hold and drag to look around.

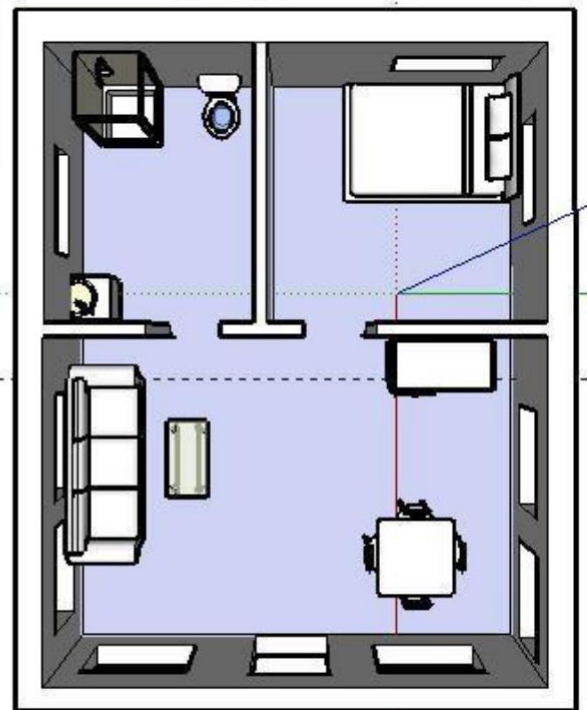


7. Let's change the field of view. Click the **Camera Menu > Field Of View**. Type 45 and hit enter. This will widen your perspective. You can go higher but the bigger the number, the more distorted it will look. Try it!



**Assignment 10: Save your House but first take a screen shot of your house at a nice 3D view.**

Label screen shot in Word as Sketch Up House- you will use this later in final exam

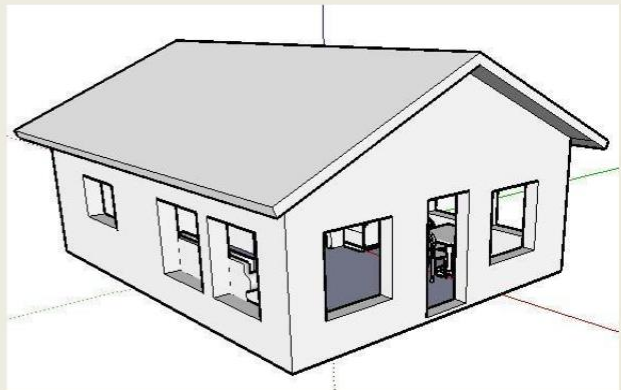
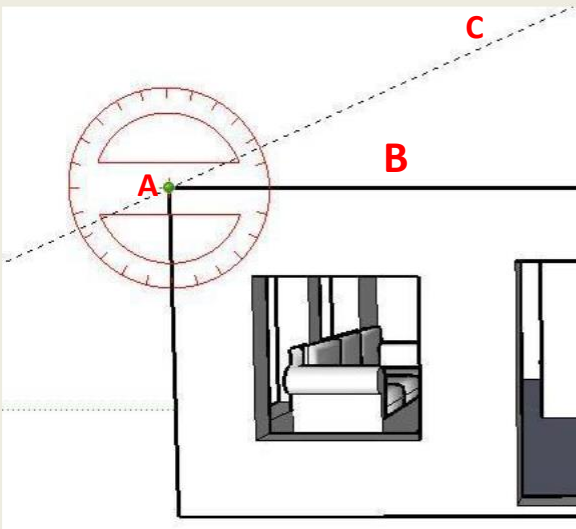


## Activity #10 Lab: The Compass Tool



Using the house .doc, your assignment is to add a roof with an overhang. Follow the instructions carefully!!

- Use the **Compass Tool** to make the pitch on your roof **24 degrees**. Click in the corner of the roof **(A)** as illustrated with the compass tool, then click again part away along the top of the front wall **(B)**, then type 24 and hit enter. This will give you a guideline for building the right pitch on your roof **(C)**. Create a guide for the other corner too.



- Use the **Line Tool** to construct the roof (don't forget to close the shape with the horizontal line drawn from one corner to the other. Then use the Push/Pull to create depth.
- Finish the rest of the roof with overhand (all 4 sides) just like you learned in Activity #4.

**Tip:** By going in the building and closing the tops of each inside doorway with a line will put a ceiling in the house.

## Activity 11: (BONUS)

It's your turn! You've learned just few of the things that you can do with Sketchup. In this activity, design a building or an object. It could be an ancient pyramid, a special room in a house, or it may be something like playground equipment, a car, or a video game machine – **use your imagination but don't bite off more than you can chew!!** Put in as much detail as possible.

Remember, anything that is made was a detailed diagram first! Get some ideas from the 3D warehouse to start.

