



Google SketchUp 7 is software that you can use to create 3D models of anything you like. Create 3D images and share them with the world.

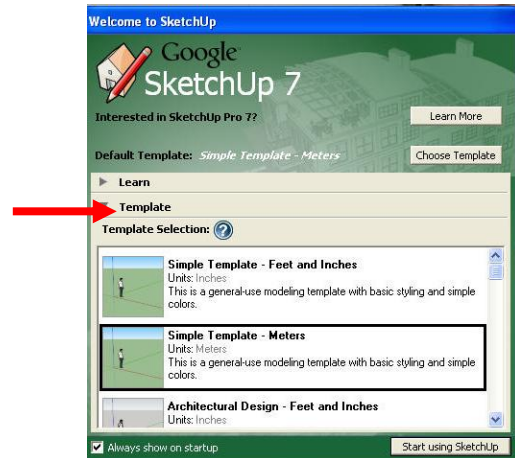
It's almost as easy as the Google people say... watch this:

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

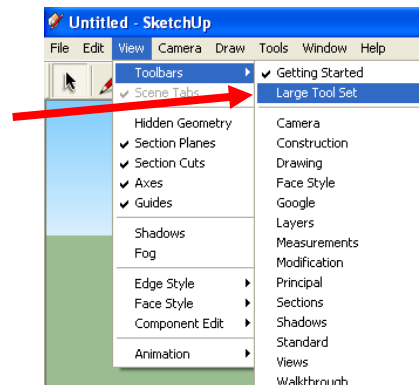
1. Start Google Sketchup 7 (double click the icon on the desktop or click Start > Programs > Google Sketup)



2. Choose a **template** – pick the “**Simple Template – Meters**”



3. Turn on the Large Tool Bar - Click the **View Menu > Toolbars > Large Tool Set**

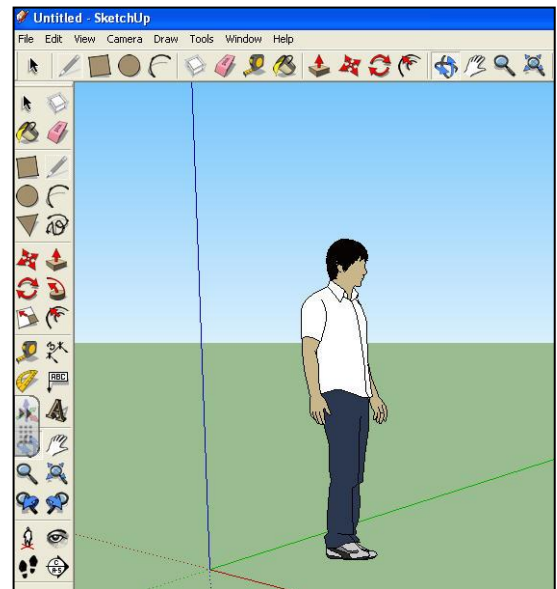


Activity 1: The Tools

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

The 3D window will appear with a person in it. (If it's not there, click the Windows Menu and choose Instructor – this will give you information about each of the tools that you try).

Here are three tools that we will start with:



1. 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)?
2. 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.
3. 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?

If you have a scroll mouse, we can save a lot of time by using shortcuts instead of these icons. Give them a try!

Modifier Keys

- **Scroll Wheel on Mouse** = Zooms in and out
- **Orbit icon & shift key** = pan from side to side

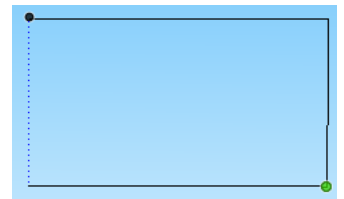
Activity 2: The Line & Shape Tools

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)

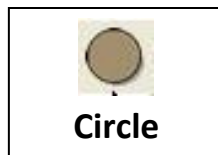
1. **Click the Draw Icon** – Draw a line by clicking once and then move in any direction and click again. If your line is vertical with the 3D perspective, it will appear blue. If your line follows the depth perspective it will turn green. If your line follows the width perspective it will turn red.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



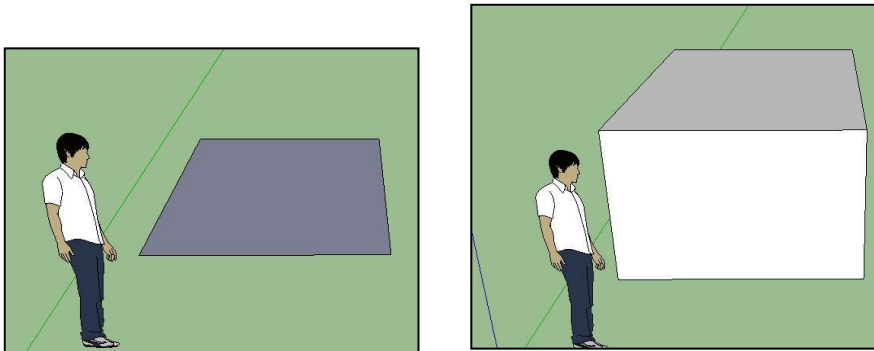
3. **Try the Circle tool, the rectangle tool, and the polygon tool.** You might want to change the perspective with the orbit tool so it's more like drawing from the top perspective looking down. Try drawing rectangles from different perspectives.

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

Activity 3: Push Pull Tools

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

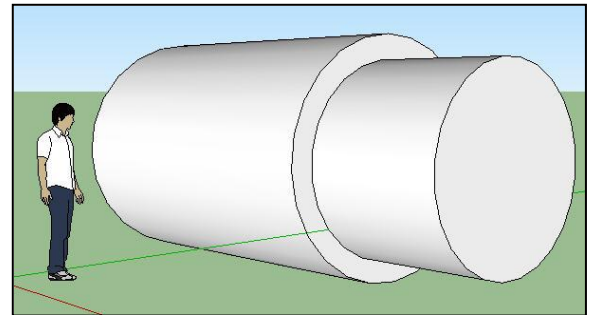
1. We can turn a simple square, into a cube. Select the Push/Pull Tool icon and click the top of the object and drag upward.



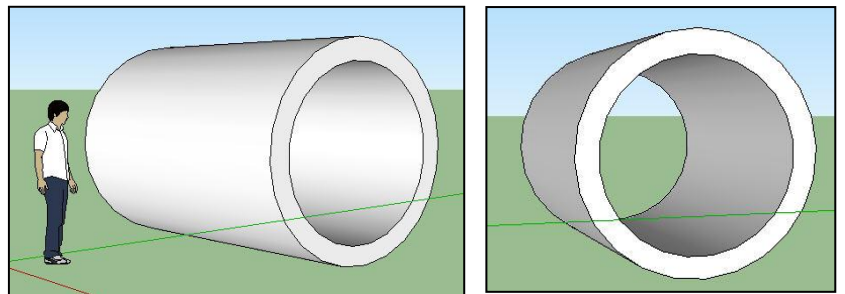
TIP: Hold down the Ctrl Key as you use the Push/Pull tool to create a new object from the old one – Give it a try!

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.



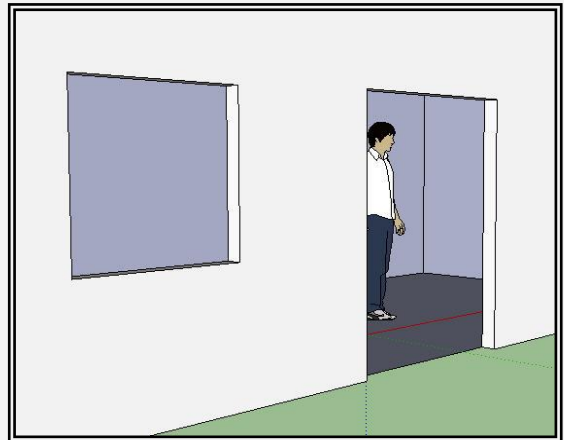
Change the perspective and see if the hole in the pipe goes right through (if not, use the Push/Pull tool to push it through the rest of the way).

Activity 3 Lab: Push/Pull Tool

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

Try this video or Search “Google Sketchup Push Pull” on Youtube and then do the activities: <http://www.youtube.com/watch?v=miC1hvWQjIQ>

1. Answer each question after watching the video.
 - a. How can you accurately Push/Pull a flat object precisely 2 meters (assuming your program is set to meters)?
 - b. What happens when you Push/Pull an object 2 meters, stop, and then type in another 2 meters?
 - c. You have 3 surfaces to expand the same amount. You move the first surface the required amount. What is the quickest way of moving the other two surfaces the precise amount?
 - d. Explain how to get the blue dotted line that shows the surface you are expanding is parallel with another surface.
 - e. Which keyboard key is used with Push/Pull to copy get a copy of the surface?
2. Create a wall (rectangle with no depth). Use the Push/Pull tool to make an opening for a door and a window. Then make a cube (an expanded rectangle with depth) and try inserting a hole for a door and a window. Was there any difference in trying to put in the door & window in the two different shapes?



3. Use the Rectangle tool to draw a window shape in a cube (same as above). This time use the Push/Pull tool to push it in **only a little** (about the thickness of what you would expect a wall to be). Then use the Select tool (the arrow), click on the pushed window surface, and hit the delete key on your keyboard. What can now be said about the thickness of the cube? (Save as Lab 3)


Activity 3: Assignment

File Needed: **Intro_Tutorial** (download it from the site or ask if the instructor has it saved somewhere for you)


Record the answers on a piece of paper to hand in.

In Sketchup, go to the **File Menu** and choose **Open** > direct the computer to the Intro_tutorial file. Click on each of the 15 Tabs (at the top of the work area) and use the information from the tutorial to find the answers to these questions:

1. Two dimensional modeling is limited to the _____ they are drawn on.
2. Three dimensional modeling is like pulling your object off the _____.

3. What is the name of this tool?  _____

4. How do you zoom in and out using the zoom tool and your mouse?

5. What is the name of this tool?  _____

6. Name Sketchup's 3 Navigation Tools: _____

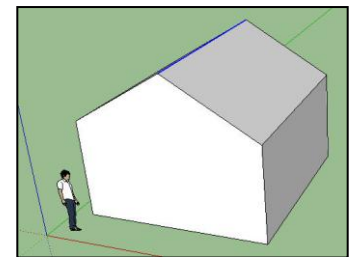
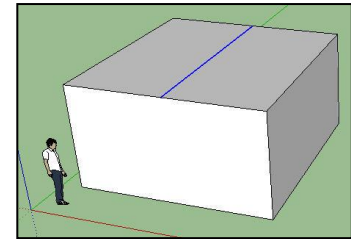
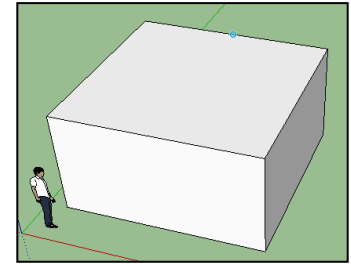
7. What does the push-pull tool do to flat (2 dimensional) objects?

8. Create the end sample as shown on the 15th Tutorial Page (15th Tab) and print it out to hand in with your module.

Activity 4: Building a Structure – Camp!

Let's build a small camp.

1. Create a cube shape from what you already learned.
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). Stop when it is raised about 1.5 meters.

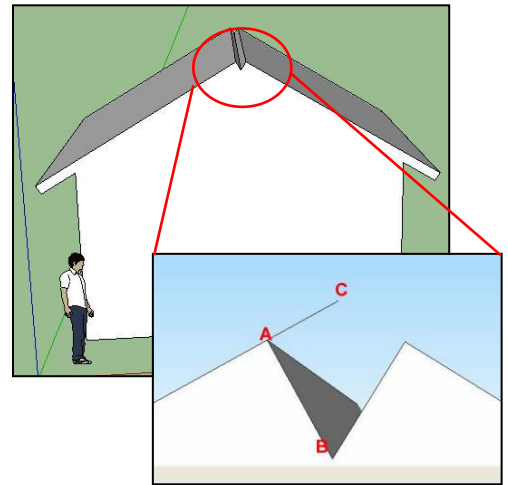


3. Give you roof some thickness so we can use the Push/Pull tool to give it some eaves. Select the Push/Pull tool, raise the roof on one side by 0.15 meters. Then select the new edge (roof edge) and extend it 0.6 meters. (You can tell the area that will be push or pulled because it turns to a dotted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

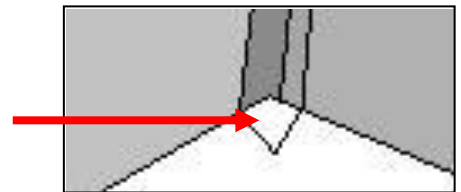
TIP: Ctrl & Z is undo
I use it a lot!!

Tip: Save your Work!

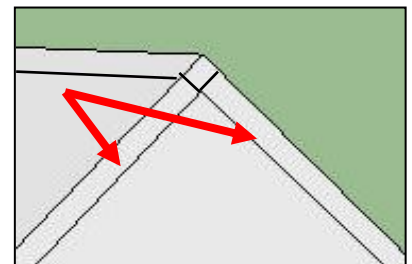
4. Let's fill in the gap at the peak of the roof. Use your line tool to click at Point **A** (as illustrated), then move your pointer down to Point **B** **but don't click** (this will create a ghosted line indicating where the line you are drawing should end), now move up to Point **C** and click when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



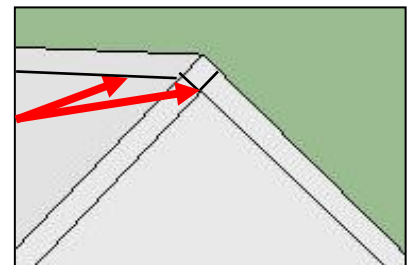
5. You see from the picture that we did fill in the shape of the peak but we now need to use the Push/Pull tool to expand it the length of the roof.



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.



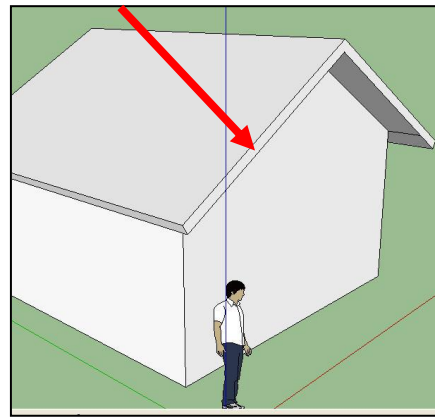
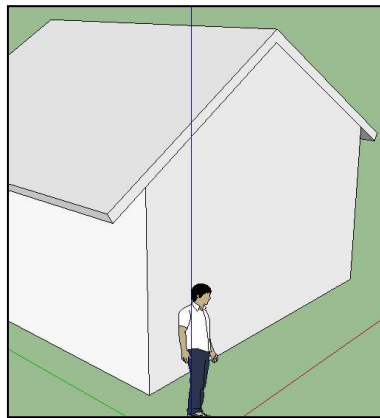
7. It's important that we erase the extra lines with the **Erase Tool**. Click on the lines with the **Select Tool** and erase the two lines on the roof and the two lines on the roof face (fascia board) that don't belong.



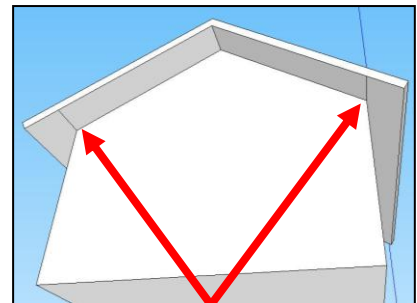
Tip: Save your Work!



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)

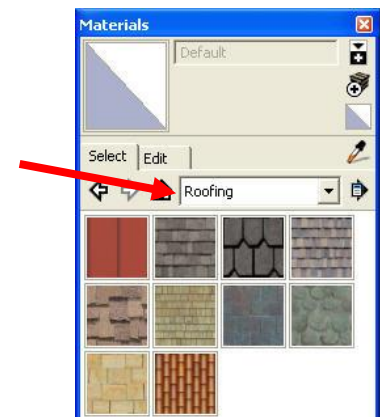


9. There are a couple more lines to **erase** to clean everything up. Rotate around the underside of the roof to find the lines. Are there any others?



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

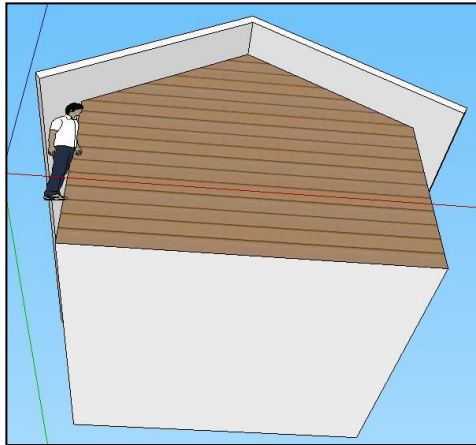
- Click on the type of shingle you want.
- Click on the surface you want shingled (don't forget to do both sides of the roof).



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

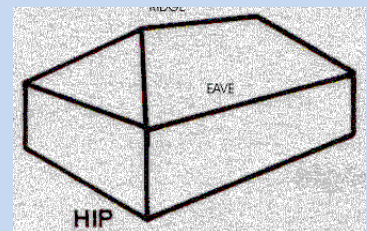
Tip: Save your Work!

TIP: Ctrl & Z is undo

Activity 4 Challenge: (optional)

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>

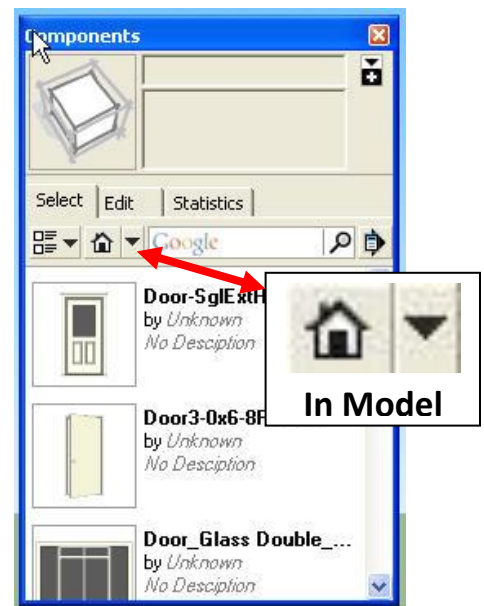


Activity 5: Door & Windows

Our building needs a door and some windows. Google 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.

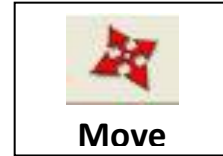
2. There are a limited number of components available in the library. You can click on the arrow next to the “**In Model**” icon and choose from the list of categories. This brings up other components that are on the internet that have been built by other designers. Click on the component to download 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

Print your building!

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

Gable Roof

Shingled roof

Siding on walls

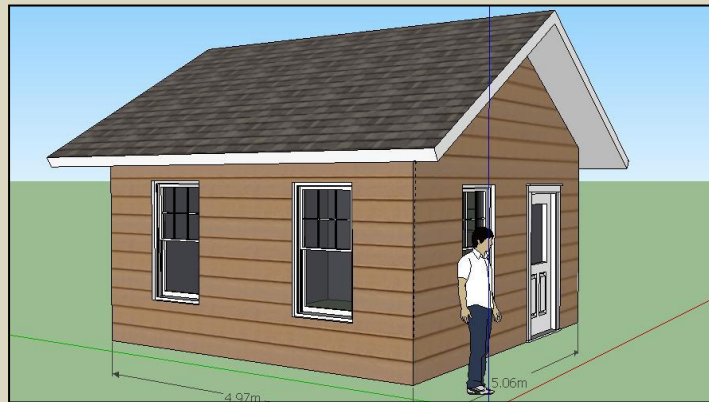
Door & windows

Overhanging roof on all sides

Roof fascia board (thickness to the roof)

All unnecessary lines erased

Marked dimensions of the floor area



Activity 6: Creating a Photo Match

Photo Match is an interesting part of Google Sketchup because it allows you to use a photo to assist in designing a 3D model. This is very handy in making real life 3D designs.

The photo should be taken from a corner perspective. Take care to make sure that the corner of the building is a vertical as possible.

1. In Sketchup, click the **Camera Menu > choose Match New Photo**. Open the picture that is provided for you called **WHES1**.

We will leave the Match Photo window settings at their default as shown here.

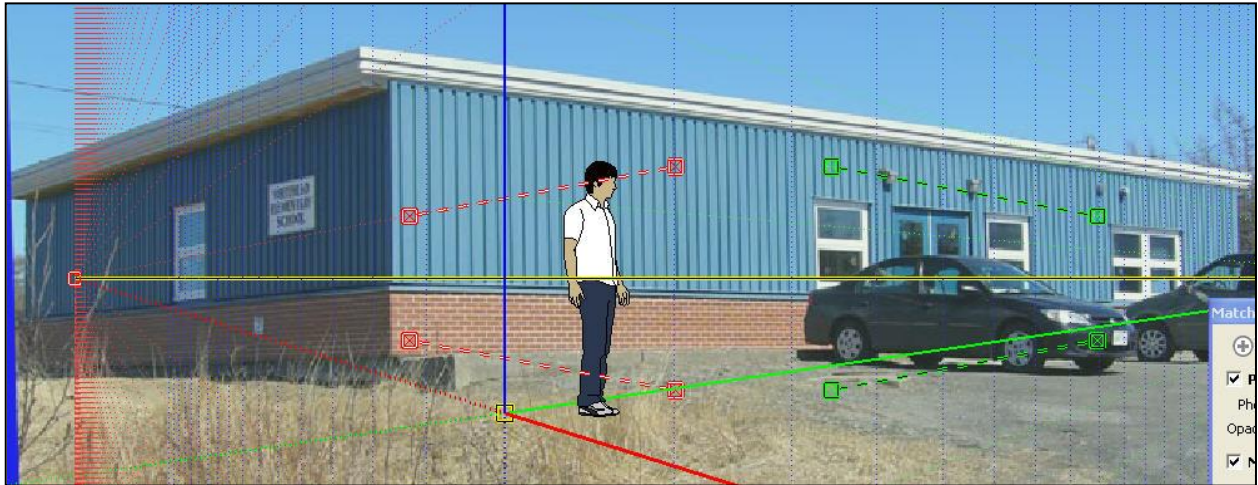


Tip:

If you have trouble with the Photo Match assignment, go to [Youtube.com](https://www.youtube.com) and type in Google Sketchup Photo Match.

Vanishing Point Lines:

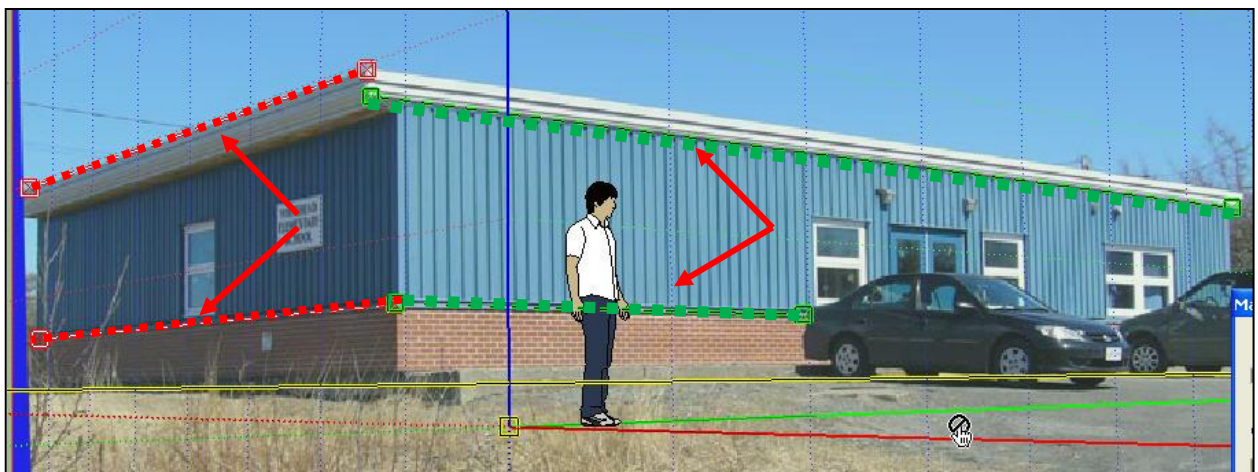
The colored lines are called the **Vanishing Point Bars**. They are used to find perspective. They are very important for lining up your work. See the lines in the illustration below:



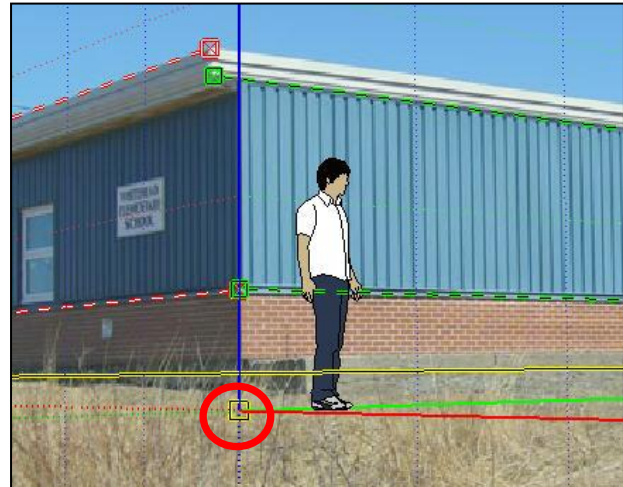
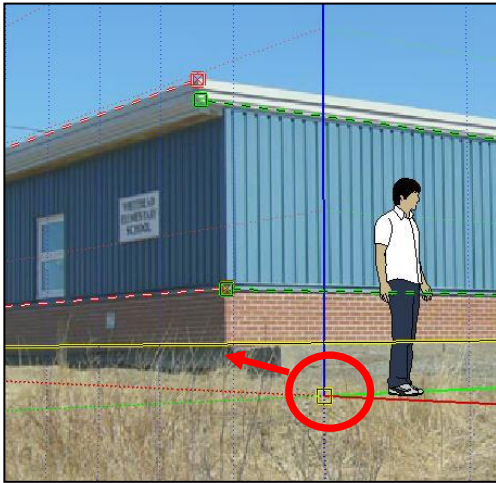
The green lines need to be moved to line up as precisely as possible (zoom in) with the vanishing point lines of the building. The second green line must match a second vanishing point line on the building.

The red lines have to be perpendicular to the green lines to find the vanishing point of the other side of the building.

2. Move the Green and Red lines to the locations indicated in this picture.



3. **Reposition the Origin:** Move the origin (where the blue vertical line meets the red and green lines) to the bottom corner of the building.



4. Lastly, click on the vertical blue line and move the mouse up and down. You will see that this scales the character larger or smaller. Your job is to scale the character the size that you think would be appropriate for this building (look at the doors and the vehicles to assist you in determining size).

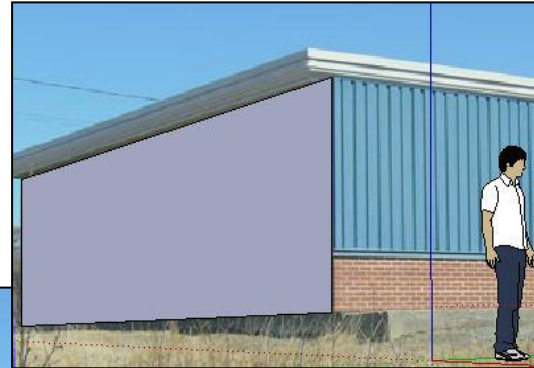
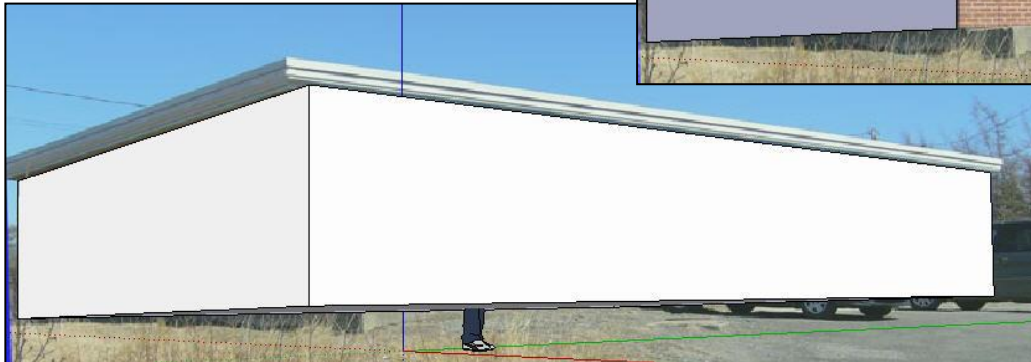
5. **Click Done!**

Save your Work!

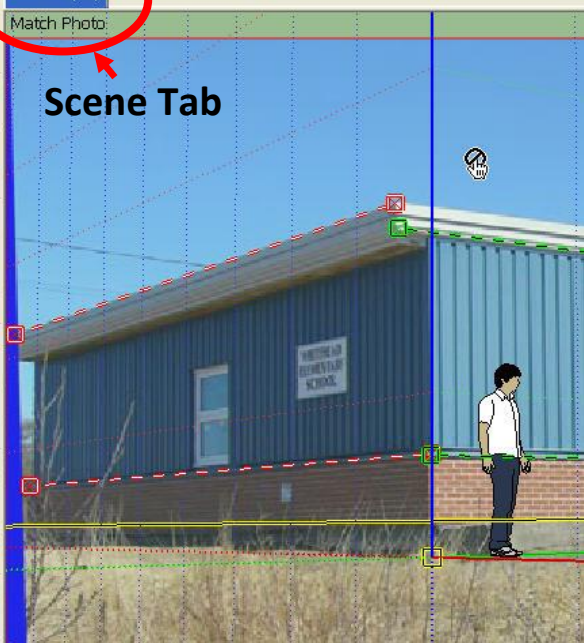
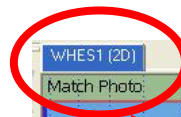
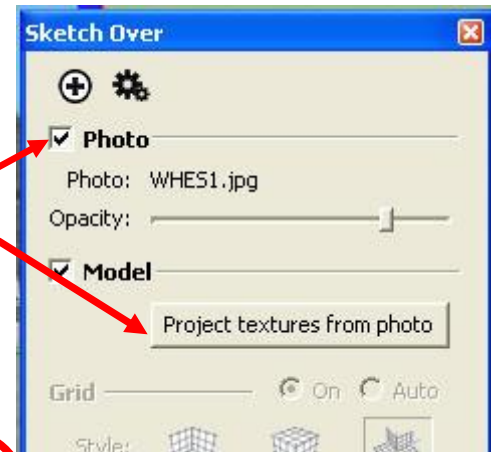
Save your design to your network drive. **Call it WHES.**



- We will create the building. Start on the end wall and use the line tool to draw one wall that you will expand back with the Push/Pull tool).



- Click the **“Project Textures From Photo”** button and see the photo conform to your design.
- Let’s proved that it worked by **un-checking** the **Photo** option. Now, you are only seeing the portion of the design that you have drawn.



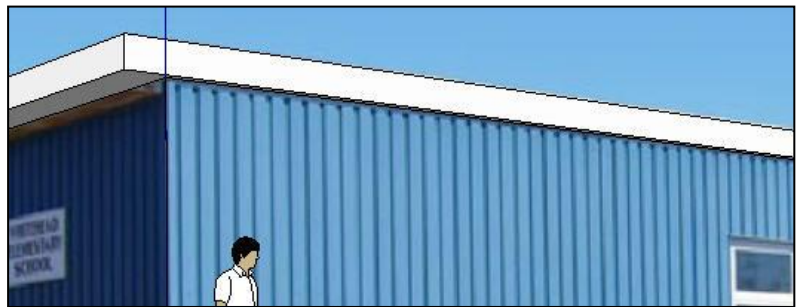
Tip: Photo Match
What if your image disappears?
 If you select another tool during a Photo Match, your photo image disappears. Simply click on the Scene Tab at the top of the work area and it will reappear.

9. Create the eaves using the **Line tool**.

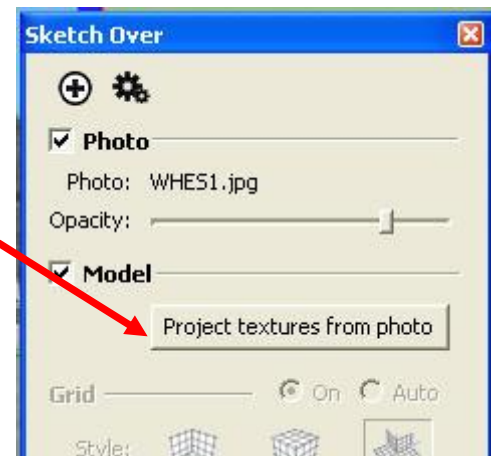
Note that we estimated the edge of the fascia board (in red) and avoided the bottom of the fascia board.



10. Click on the fascia board with the **Selector Tool**, then use the **Push/Pull Tool** to expand the eaves to go the length of the roof.



11. Select each of the Fascia boards and click **“Project Textures From Photo”**. Now the image is linked to the Fascia boards.



Assignment 6:

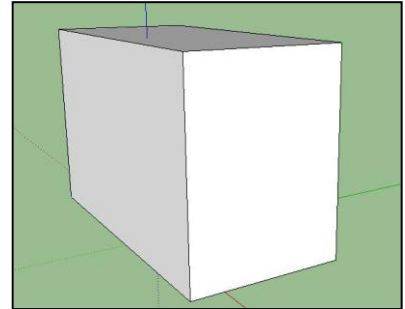
Print the completed assignment!



Activity 7: Stretch a Photo Over a Model

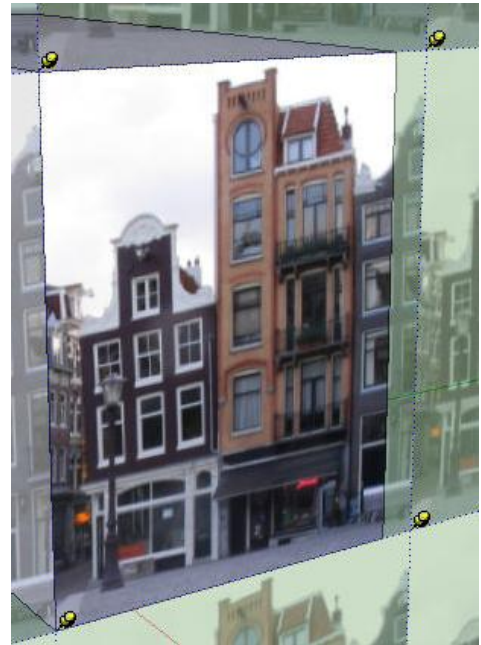
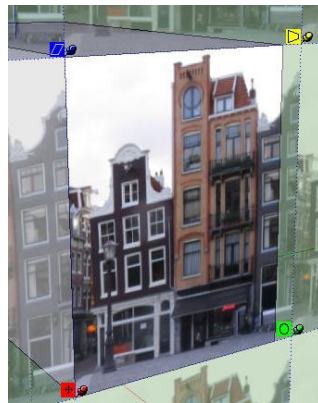
You can add a part of a photo to the face of a building that you are creating. This makes a very neat effect.

1. Start a new Sketchup file.
2. Create a rectangle shape (narrow front, longer depth, and then use the Push/Pull tool to stretch it 3 stories tall)
3. Go to **File > Import** > and choose the **Amsterdam photo**. (you either downloaded the file or it was provided by your instructor)
4. Click the bottom of your cube shape and then again at the top of the cube in order to set the picture on the cube. You don't have to be accurate as you will see.



TIP: Ctrl & Z is undo

Right click on the Cube/Image and choose **Textures > Position**. If the pins are brightly colored (like picture below), right click again and un-select the “Fixed” option. The pins should be a dull yellow color (like the picture at the far right).



5. This is the building that we want to work with in this activity (picture at far right). Click the top, left pin once, then drag it to the top, left location indicated below. Do this for all the pins. Zoom in so you can be accurate.



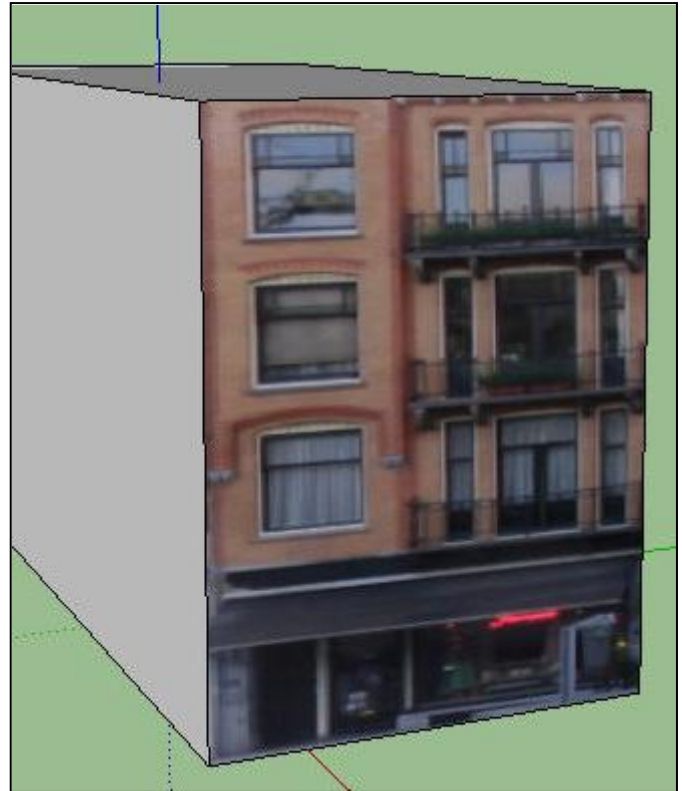
6. Now, grab each pin and pull it to the edge of the Cube. So that it ends up like the picture to the right.

Tip: Stretching a Photo

What if your pins disappears?

First, you must have the Select Icon active in order to get the pins.

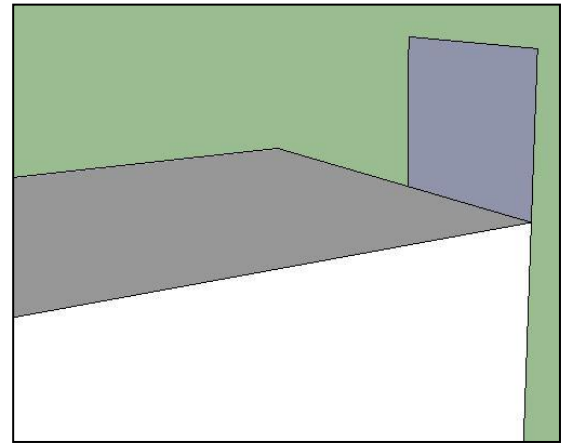
If the pins disappear, just right click and choose Texture > Position



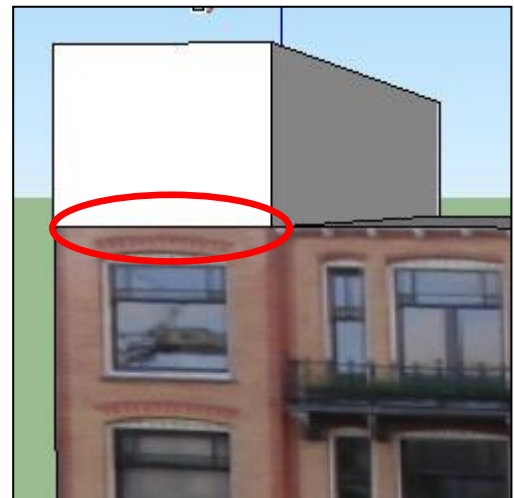
7. Since we have cut the top off the building, there is still a little work to do. Use the **Orbit tool** to move the cube so you are looking at it straight on. Use the **Line tool** or the **Rectangle tool** to create the portion of the top floor that we are missing. It is just approximate because you can use the Move tool later to adjust it.



- Now, orbit around so you can use the Push/Pull tool to give your rectangle depth. Stretch it so it is even with the back of the cube.

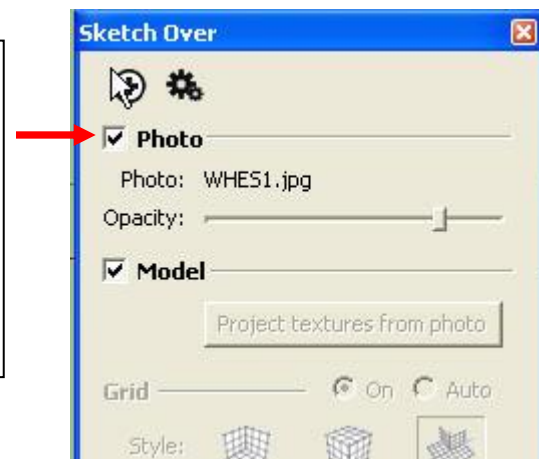


- Use the **Erase Tool** to click on the line between the existing building and the extra part that you just built. The image should now be transferred to the new part too.



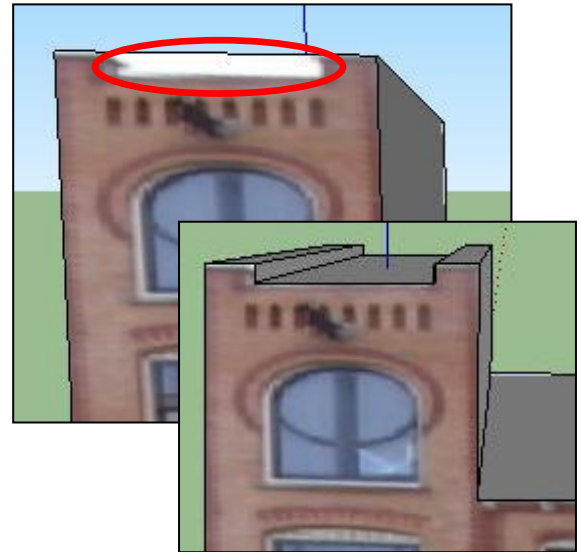
Tip: Remove Background

Uncheck the Photo box and the background picture will disappear. This is handy so you can see your design more clearly. Give it a try!



11. How can you get rid of that white area between the two high points on the top of the building?

Suggestion: Zoom in and use the rectangle tool to create an area around the white and then use the Push/Pull tool to get rid of the rectangle area.



12. There is one part left on the top floor of the roof to create. See if you can add that part.

Tip: Remember to give your drawing depth with the Push/Pull tool, before deleting the lines to reveal the picture image.

When complete, go around the building, and delete any unnecessary lines, just like you did in Activity 4, #9.



Save your Work! Call it Amsterdam.

Assignment 1: Print the completed activity

Activity 7: Assignment 2

Use the photos provided, to create all 4 sides of a building. **Choose** either the house or the school – There are four photos of each but you might only need two. They can be downloaded from the site.



TIP: Use the picture for the sides. Use the Materials Component (from Activity 4. #10) to texture the roof.

Activity 7: Challenge 1 (optional)

Borrow a digital camera from your instructor and photograph a building that is in your area (make sure it's not too tricky to design). Create a Sketchup model of the building that includes a photo over the design.

Activity 7: Challenge 2 (optional)

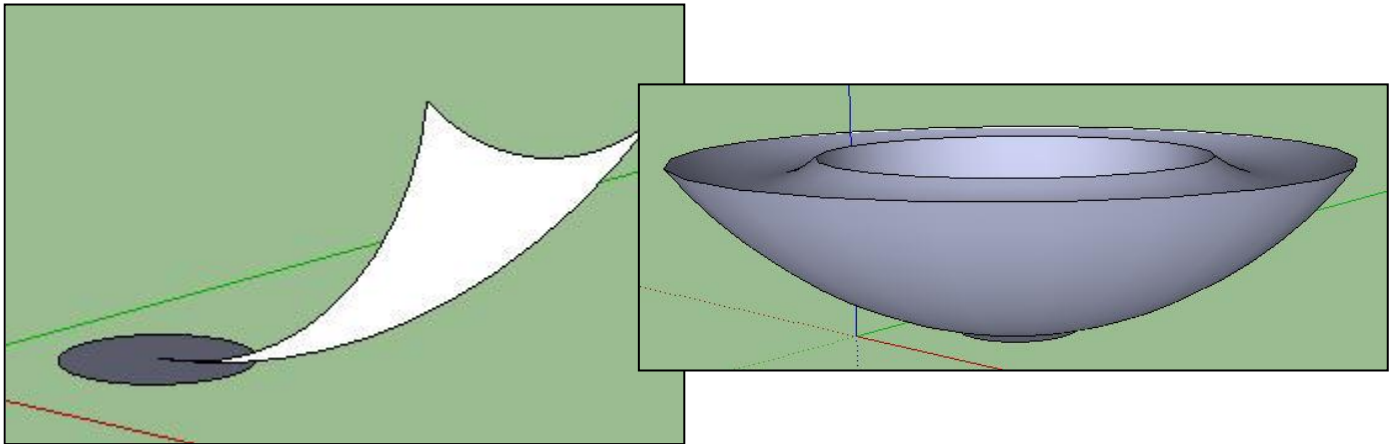
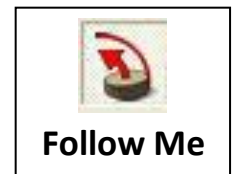
When you are done Challenge 1, upload the design to Google Earth. They will decide if it is high enough quality to include in Google Earth. Do a Youtube and Google search to get some uploading assistance. This site will help:

<http://sketchup.google.com/intl/en/training/videos.html>

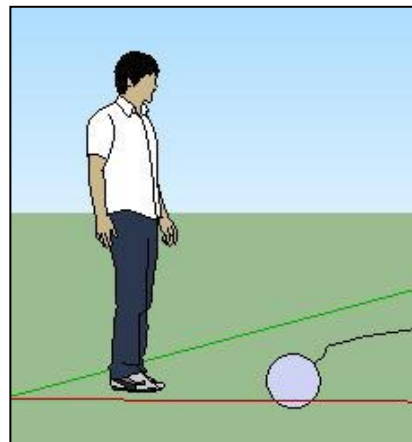
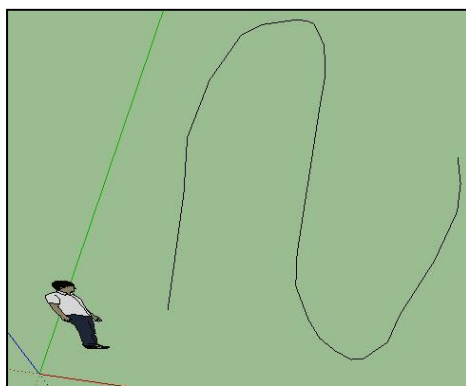
Activity 8: Follow Me Tool

The **Follow Me Tool** allows you to create very interesting 3D shapes from a 2D image by conforming it to a path.

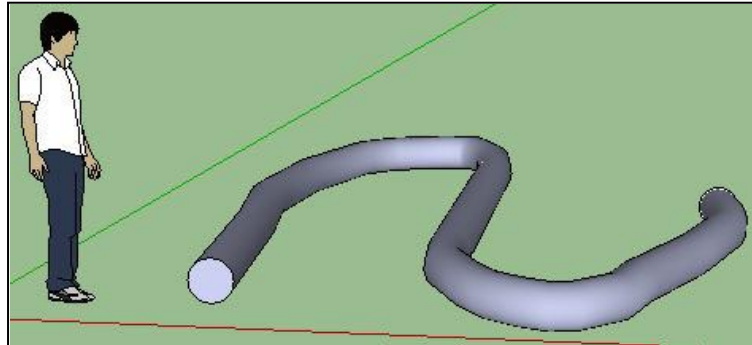
This simple shape is created around the circle (path) using the **Follow Me Tool**.



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.



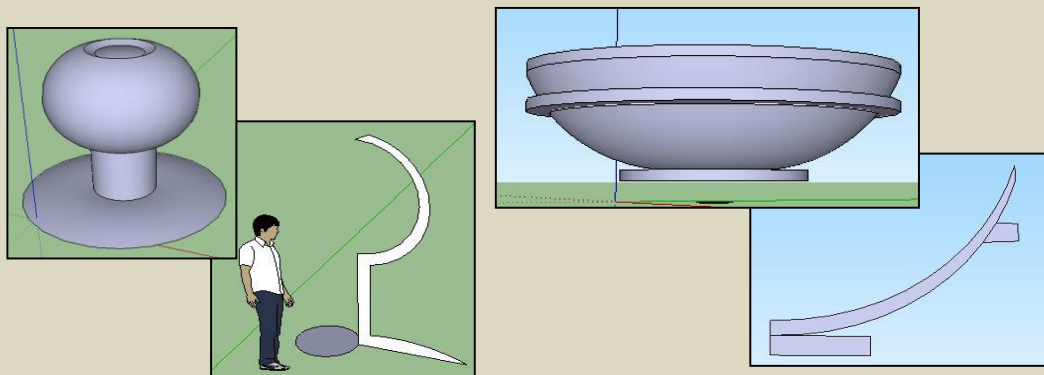
TIP: If that didn't work then you probably didn't design the path and the object perpendicular to each other. Use the Orbit Tool to change your perspective when completing each of the two steps.

Activity 8: 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



Activity 8: 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 8 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=cv7fw2IHkMQ&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.

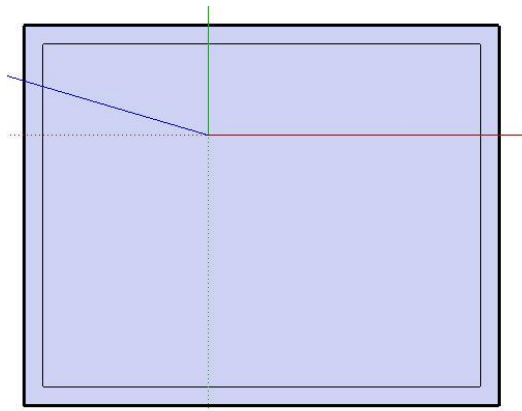
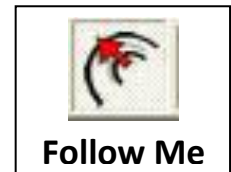
Activity 9: Floor Plans

In this activity, we will create a floor plan for a camp. The camp 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 **Temples Tab** and choose “**Plan View – Feet & Inches**”. You will work starting from the top, looking down.



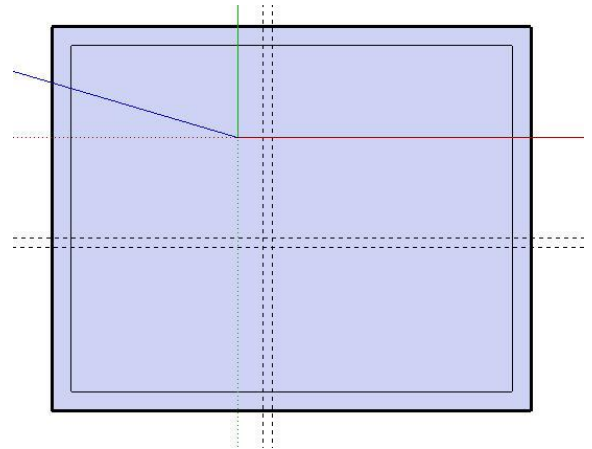
2. Now, create a new document. **File > New.**
3. We’re going to create a floor plan of a house. Use the **Rectangle Tool** or the **Line Tool** to create a 25 foot by 20 foot floor area. Type in **25’, 20’** (just like I’ve typed it here with an apostrophe after the 25 to represent feet, and a comma 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.



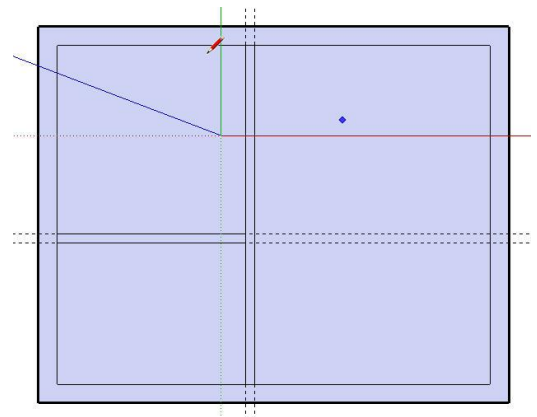
5. Select the **Tape Measure Tool** and measure 10 feet out from the inside of the left wall (towards the center of the floor plan). This will create a dotted guide line for you when you are making your inside walls. Make another one at 10' 6" (10 feet, 6 inches). This will allow for a 6 inch thick inside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

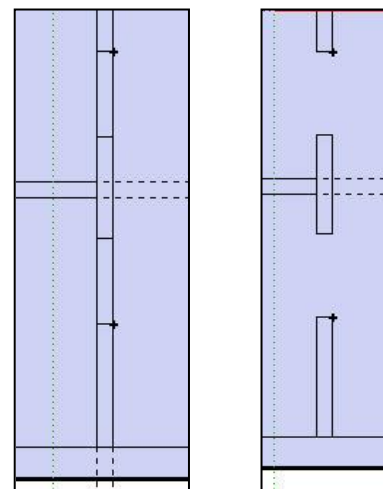


6. Use the Line Tool to create the inside walls for the bedroom and the bathroom as shown in the picture.

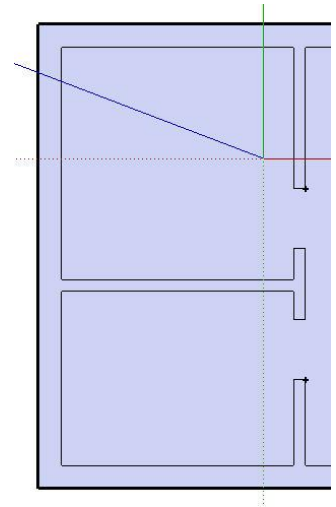
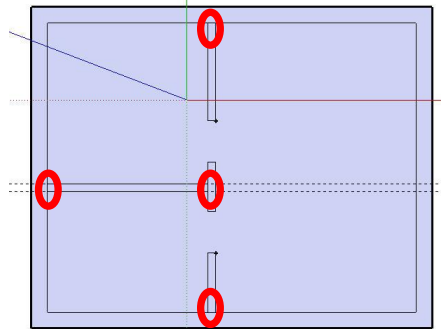


7. Create lines for the inside doors (about 3' wide or a little less). Then use the Erase Tool to delete the lines to allow for an door opening

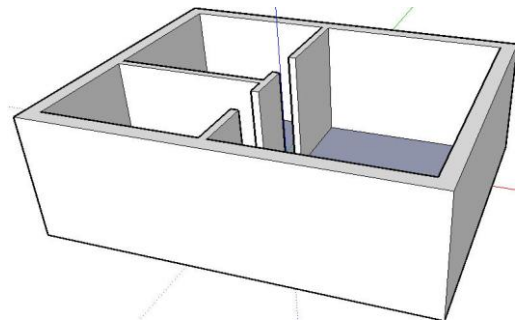
Save your Work! Call it Camp.



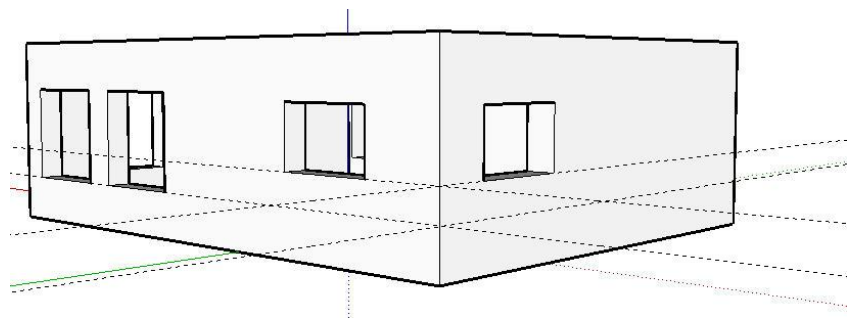
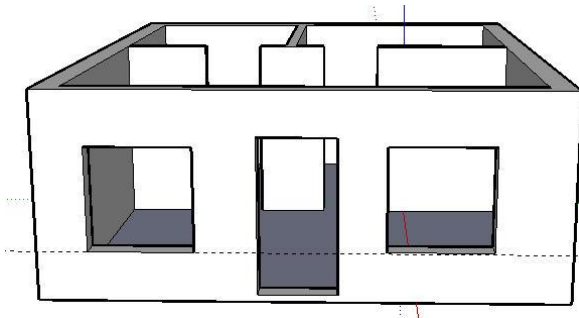
Next, use the **Erase Tool** to delete other lines to merge the walls as one object. (I erased my guidelines too)



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 camp needs. (Use guidelines to help you keep everything even).

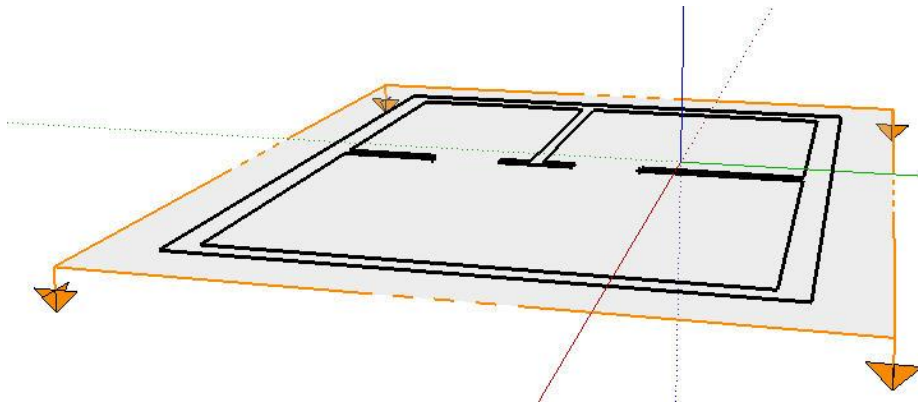


Activity 10: Add Components and Look Around

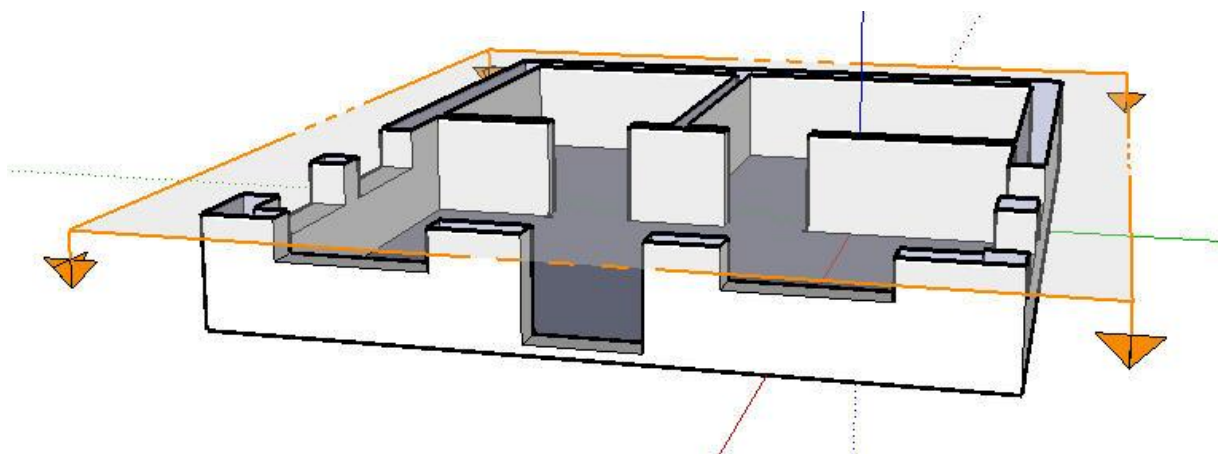
We need to add some items to the inside of our camp like a bed, cupboards, a sink, toilet, kitchen table, etc.

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 camp 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.

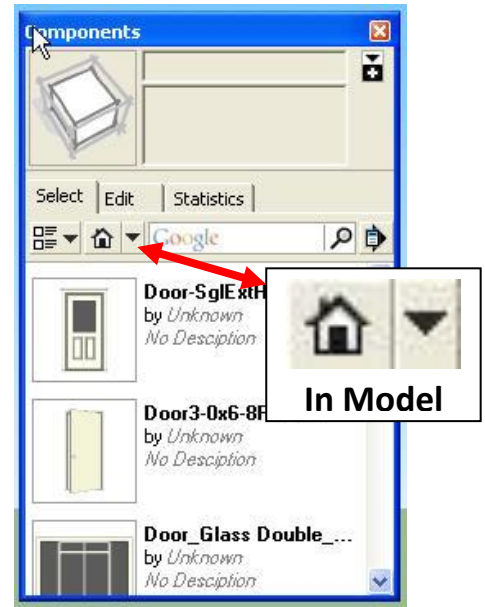


2. We want to see a little more of the walls so use the **Move Tool** to click on the walls and move them up just a little (see picture).

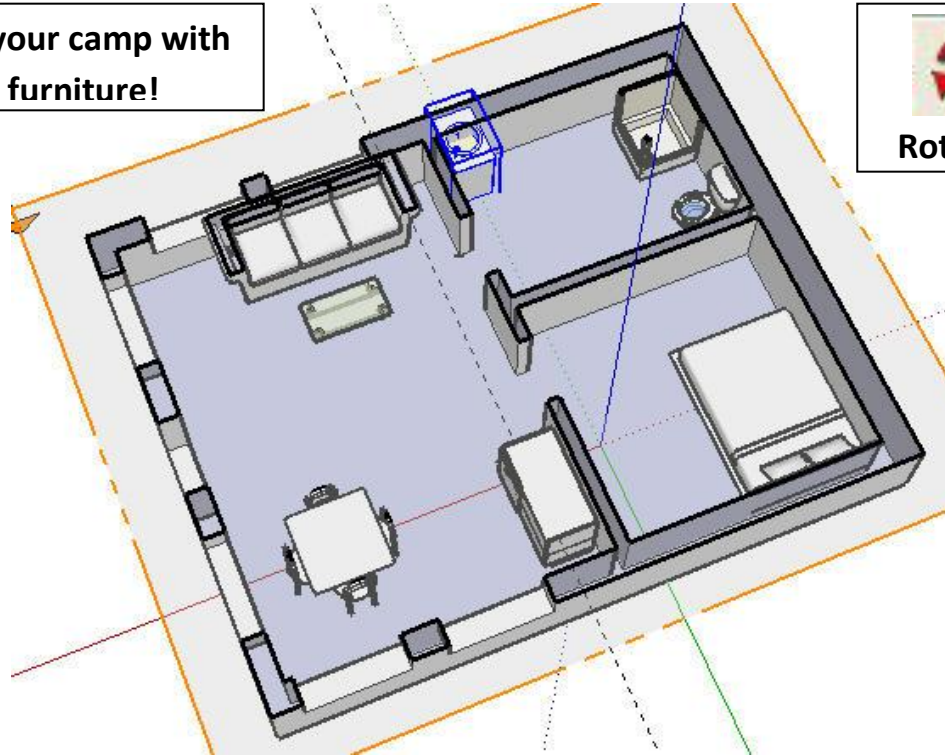


3. Now, we can place the furniture. Click **Windows > Components**. Choose the Architecture components from the **"In Model"** arrow. If you can't find a component you need in the library, type the item name in the search location.

4. 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.



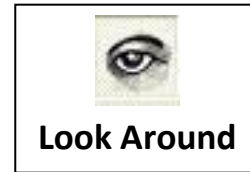
Fill your camp with furniture!



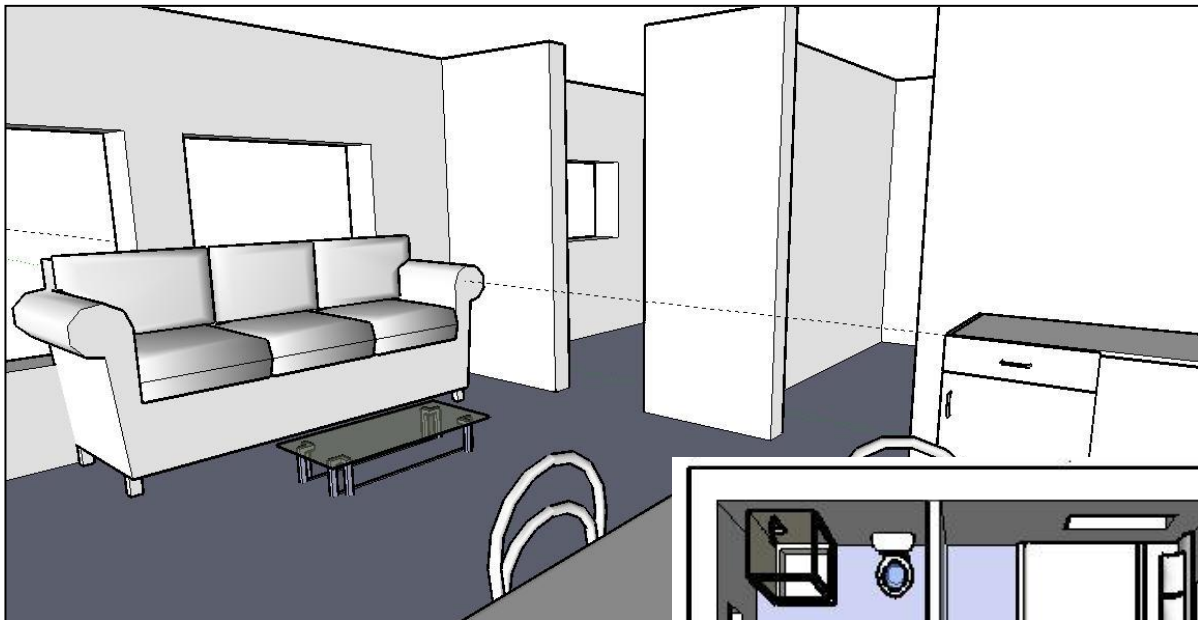
Rotation

5. 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 camp. Click the **Look Around Tool**. Now, click and hold and drag to look around.

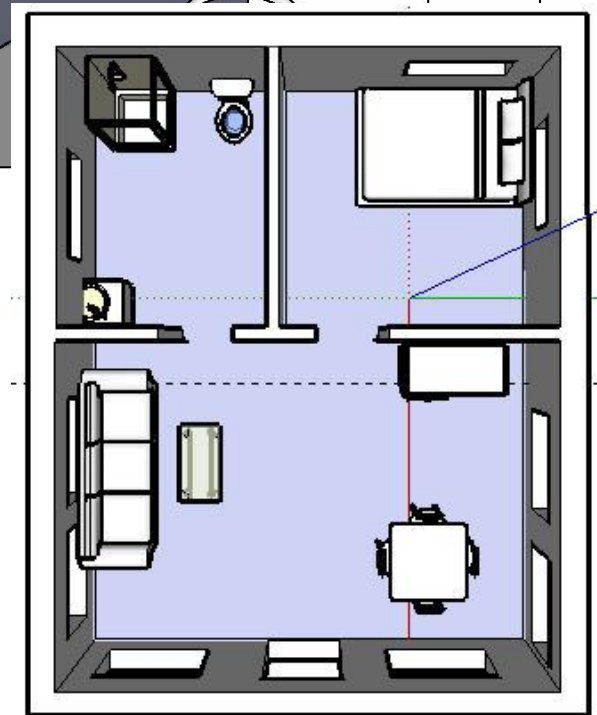


7. Let's change the field of view. Click the **Camera Menu > Field Of View**. Type 45 and hit enter. This will widen your perspective. You can go higher but the bigger the number, the more distorted it will look. Try it!



Assignment 10: Print the completed activity (top view).

Important: Print the floor plan. Now, re-save the document as "Camp 2" for the next part of the lesson.



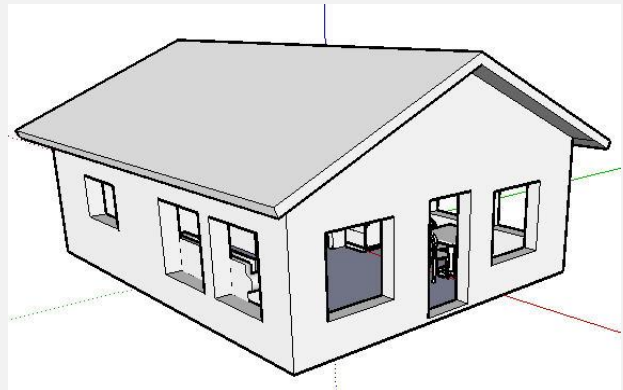
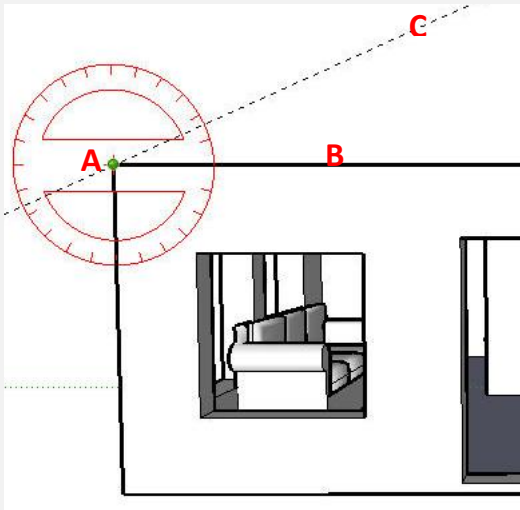
Activity #10 Lab: The Compass Tool



Compass

Using the Camp#2 file, 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.

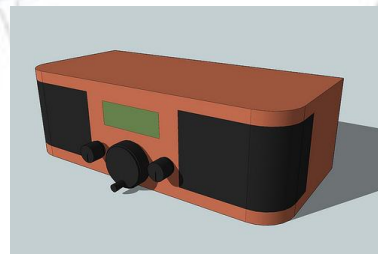
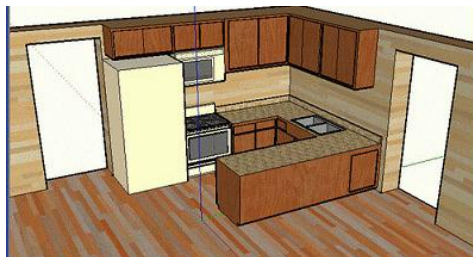


- Use the **Line Tool** to construct the roof (don't forget to close the shape with the horizontal line drawn from one corner to the other. Then use the Push/Pull to create depth.
- Finish the rest of the roof with overhand (all 4 sides) just like you learned in Activity #4. **Print it when it is complete!**

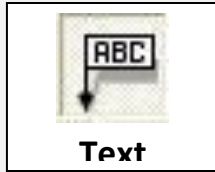
Tip: By going in the building and closing the tops of each inside doorway with a line will put a ceiling in the camp.

Activity 11:

It's your turn! You've learned just a few of the things that you can do with Google SketchUp 7. 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!



Activity #11 Lab: Text



The easiest way to learn about the text options in Google Sketchup is to use the video that Google has provided for you. Watch the short video, give the text options a try, and answer the questions. (if the video is not available, use Youtube.com to search Google Sketchup text)

Video Link: <http://www.youtube.com/watch?v=CIHdYWFczgU>

1. Text that describes an object is called _____ text. It might be the name of a component or the length of a part of the component.
2. The arrow that comes out from an object is called the _____.
3. Text that moves around according to the perspective that you are using requires you to set the Leader option to _____. Then, if you orbit around the object the text will always be readable.
4. If you want the text to remain in the same location with a set perspective, set the leader option to _____.
5. The 3D text option is real geometry that can be manipulated just like an object that you draw. If you wanted one letter in a word to be thicker (have more depth), what tool would you use to do this? _____
6. Insert any component (such as a seat), create a leader text that describes the object in RED. Then, create a 3D text of your name with some letters thicker (more depth) than the others. **Print it out for your teacher.**

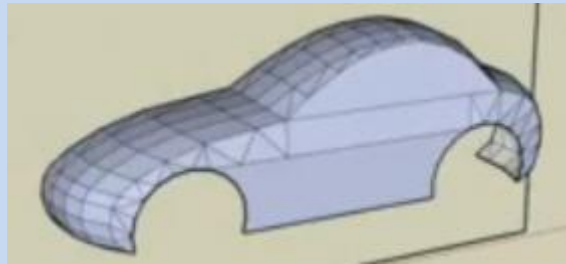
The newest features of Google Sketchup 7:
<http://www.youtube.com/watch?v=azFbj5hK9o4>

Activity 11: Challenge 1 (optional)

This video was created by a student in Alabama. His passion is designing 3D cars. Try to imitate the concept of a simple car design like he illustrates in his video. You might need to Google some of the techniques that he uses if it isn't clear to you. Watch very closely to see which tools he uses.

Watch the video:

http://www.youtube.com/watch?v=Vk5I_tNw7TU&feature=channel_page



Tip: Mirroring Objects

Mirroring means flipping an object to face the other way.

Since there isn't a Mirror Tool in Sketchup, use the **Scale Tool**, select the object, and choose the center anchor points. Instead of stretching the object to make it bigger, do the opposite, pull to make the object smaller until it becomes the mirror image of what you started with. Typing in -1 and hitting enter, will do the same thing when you start scaling. This video makes it look even easier:

<http://www.youtube.com/watch?v=pbbuqskh0wo>

