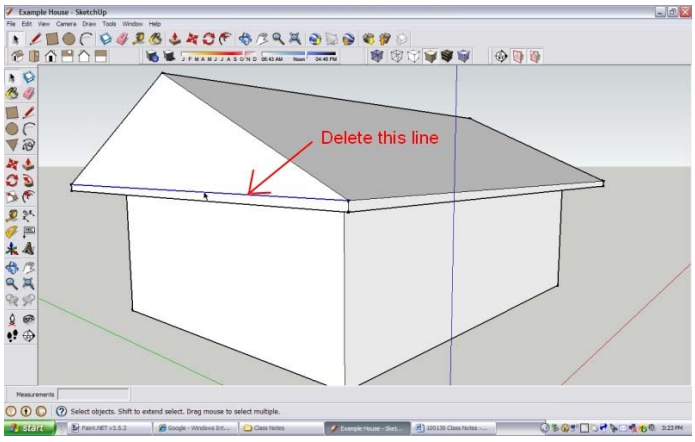
Week 2 – Adding details to a SketchUp® model.

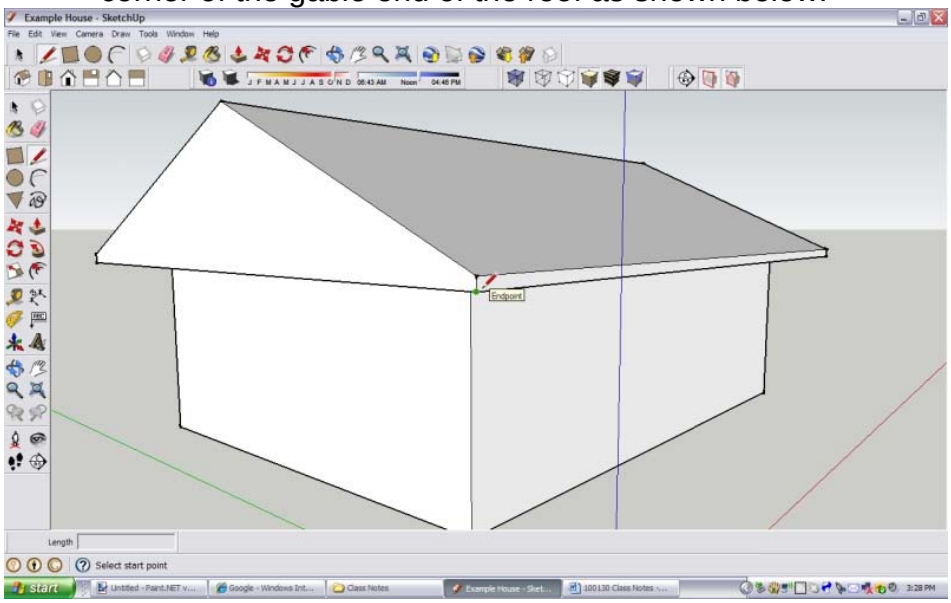
To recap, in the previous paper we learned how to make a simple building shape that was 32’ long, 24’ wide, 10’ high and had a gable roof with a 3’ overhang and 6” fascia.

Now that we have our basic building shape we’re going to add some details, windows, a door, improve the roof shape a bit, and some colors and textures.

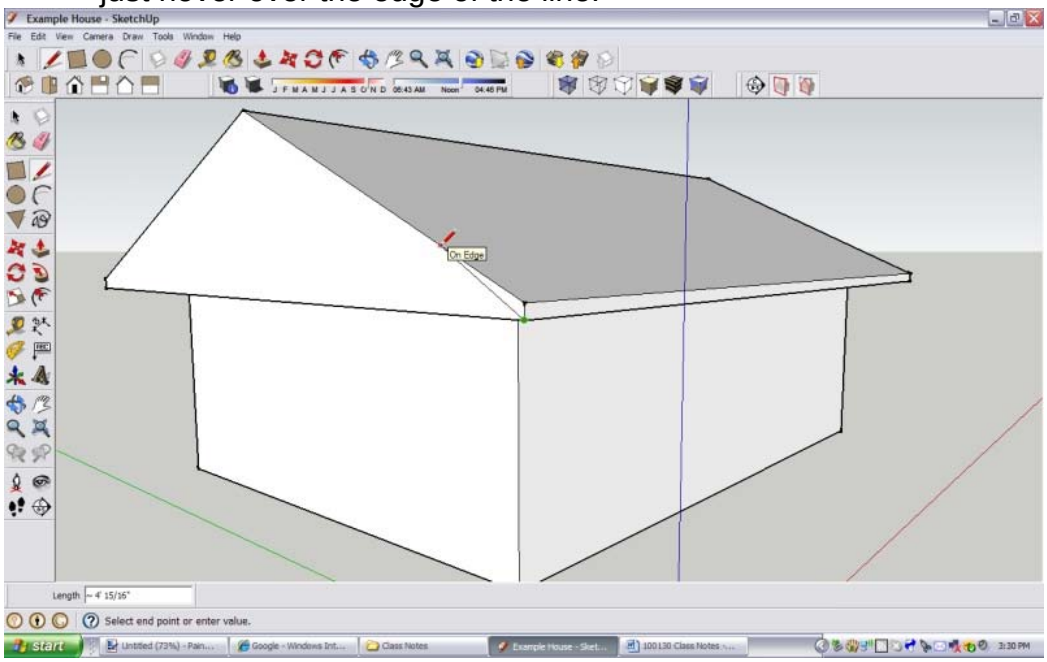
First we’re going to make the roof a bit more interesting. This will serve to teach some more of the tricks for using SketchUp®. So start the program and open your model. Orbit and zoom around until your view looks something like the one below.



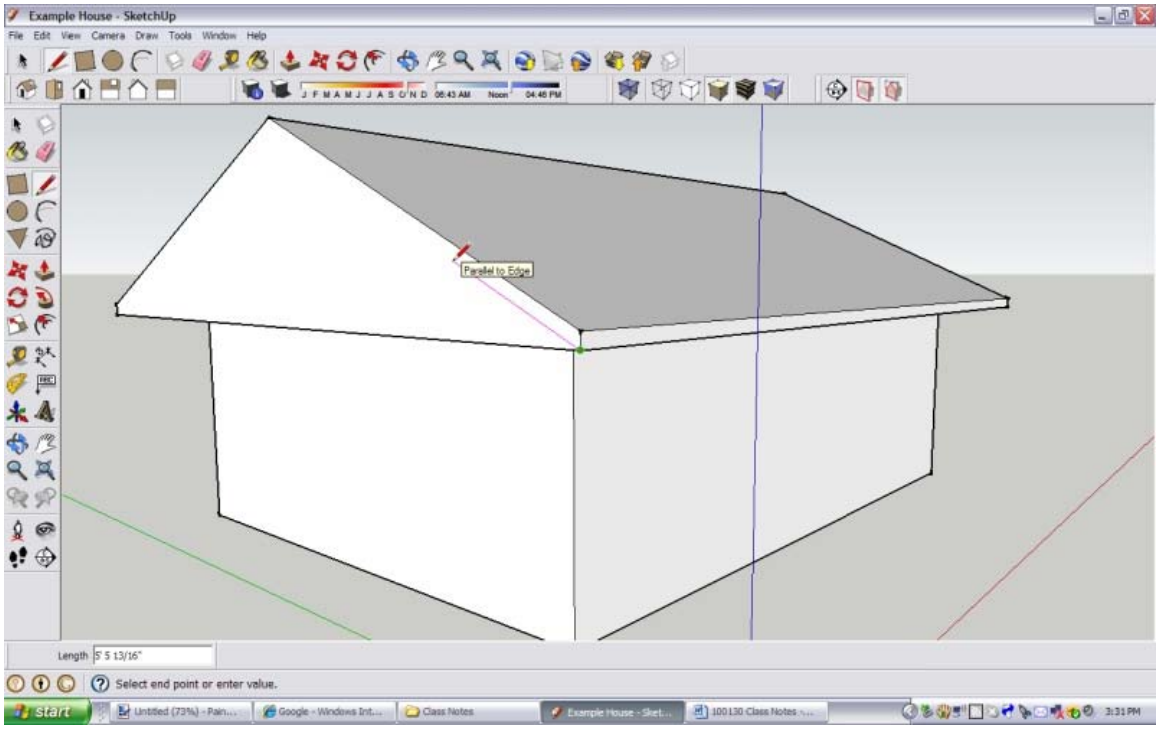
1. Delete the parallel line that is crossing the gable end by taking the “Select” tool  (Spacebar), clicking on it so that it turns blue, and hitting Delete.
2. Choose the line tool by typing L and click on the Endpoint at the bottom corner of the gable end of the roof as shown below.



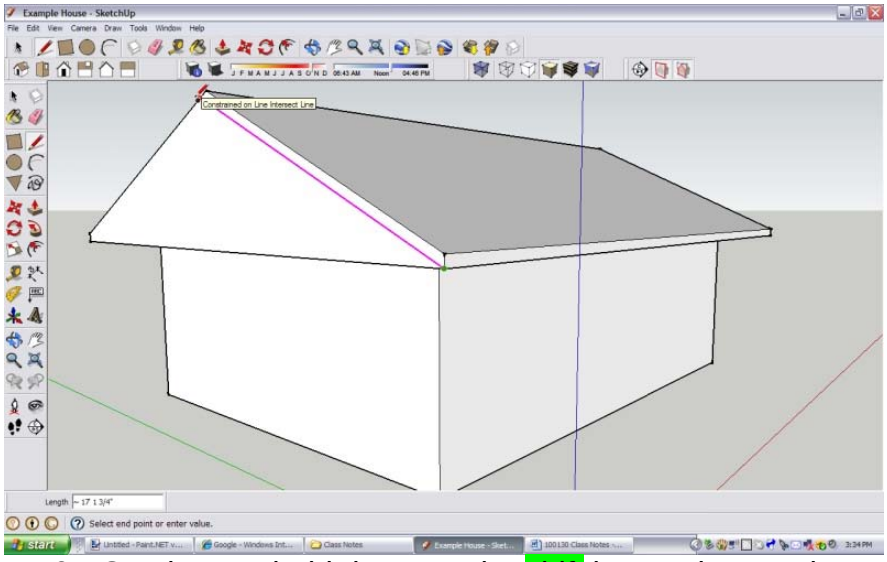
3. Now hover over the angled line that goes from the roof edge to the peak of the roof as shown below. This will activate another one of the “Inference Tools” that make SketchUp© so easy to use. Do not click on anything yet, just hover over the edge of the line.



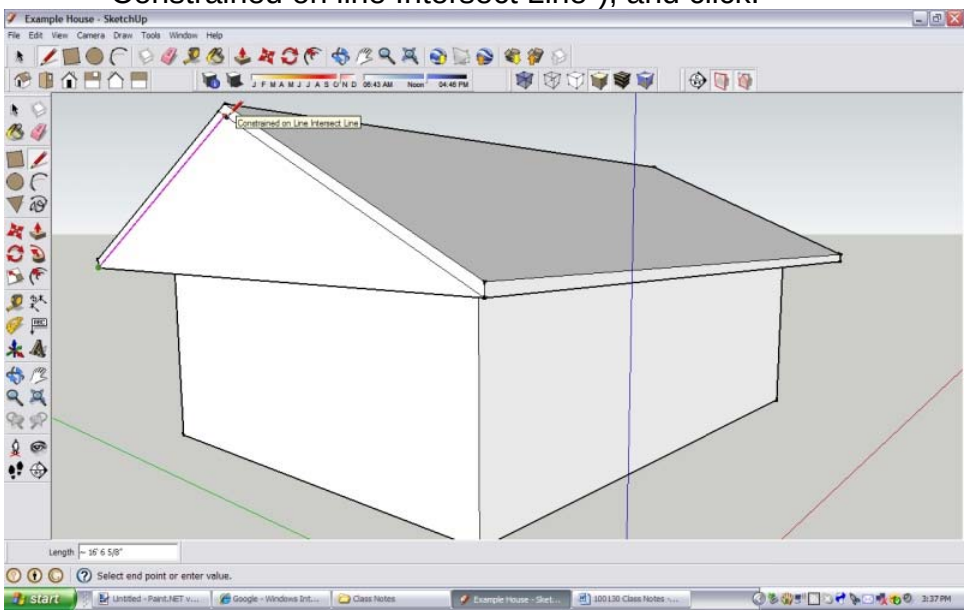
4. Now move the cursor down so that you get a pink line and the message “Parallel to edge” as shown below. SketchUp has now inferred that, because you were hovering over that line, you want to draw something parallel to it. Don’t click on anything yet!



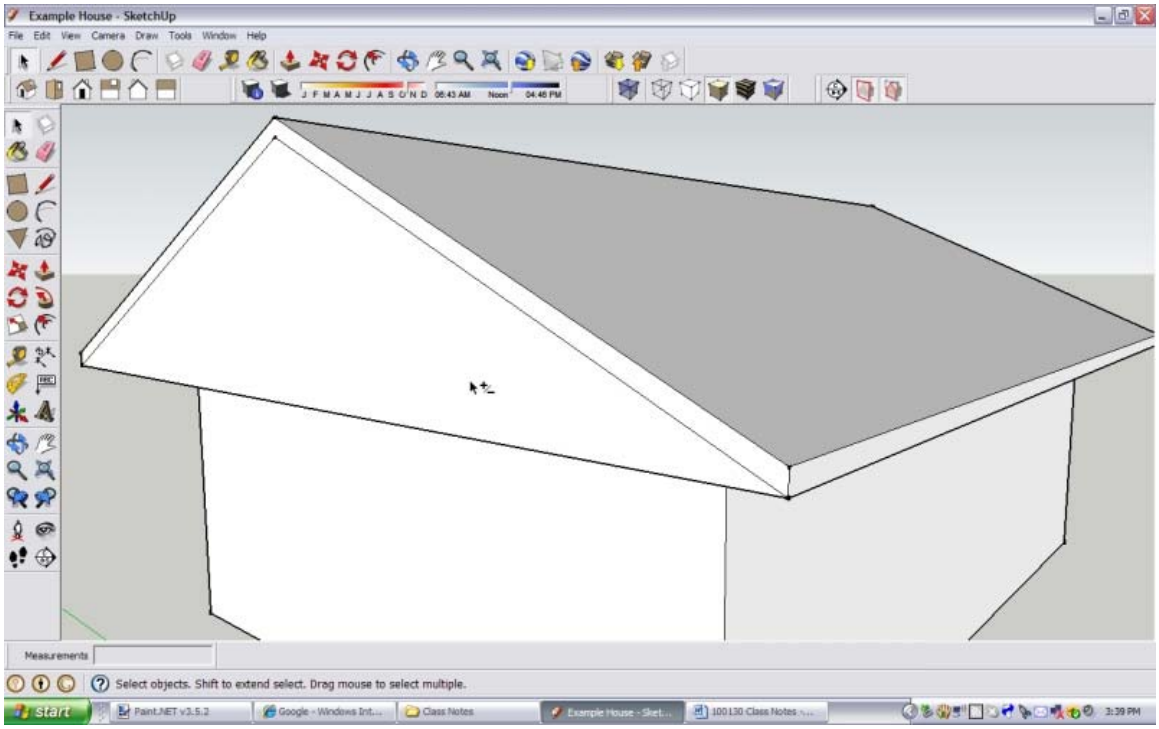
5. Next, hold down the shift key and this will lock the inference so that, no matter where you move the mouse, the line you are drawing will stay parallel to the edge of the roof (see below). Notice that the pink line becomes bold.



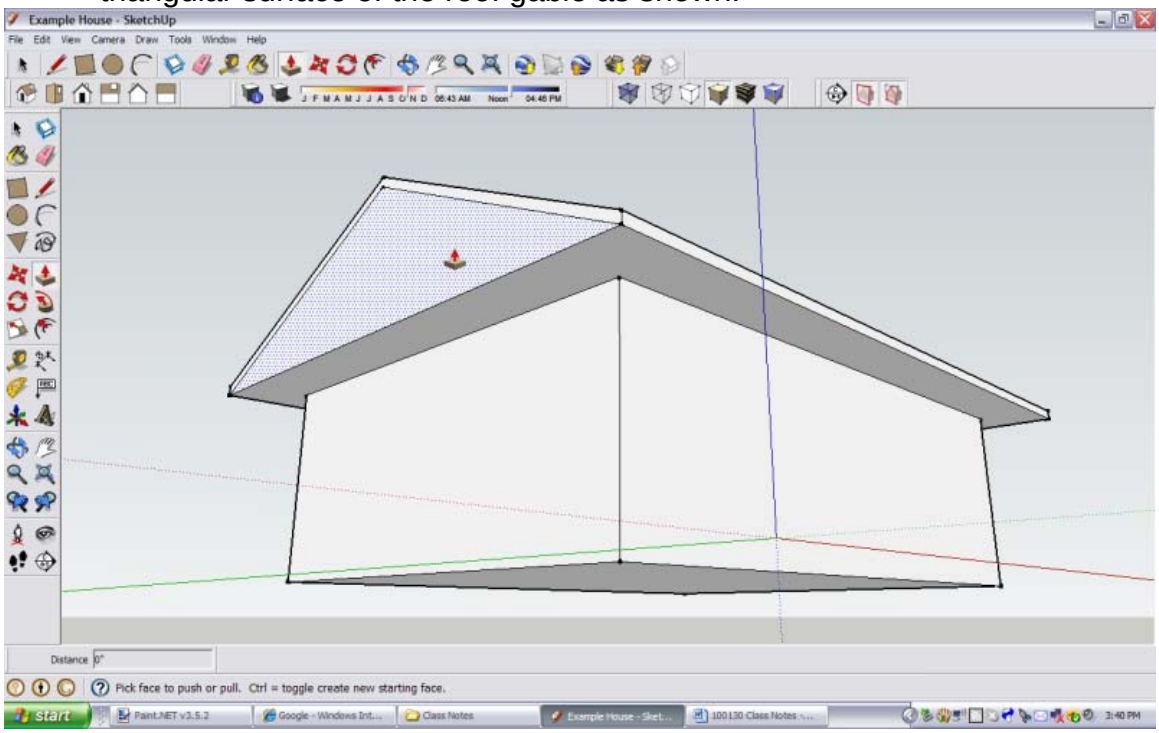
6. Continue to hold down on the shift key and move the tooltip up to where the pink line intersects with the other edge of the roof as shown above. When you are in the right spot you should get the message “Constrained on Line Intersect Line”.
7. Keep holding shift and click on the intersection point. The pink line should turn black and the message box should disappear.
8. Now repeat the process on the other side of the roof. Starting at the bottom left-hand corner, click on the endpoint, hover over the roof edge, move down to get the pink “parallel to edge” line, hold shift, move up to where the two lines intersect as shown below (message reads “Constrained on line Intersect Line”), and click.



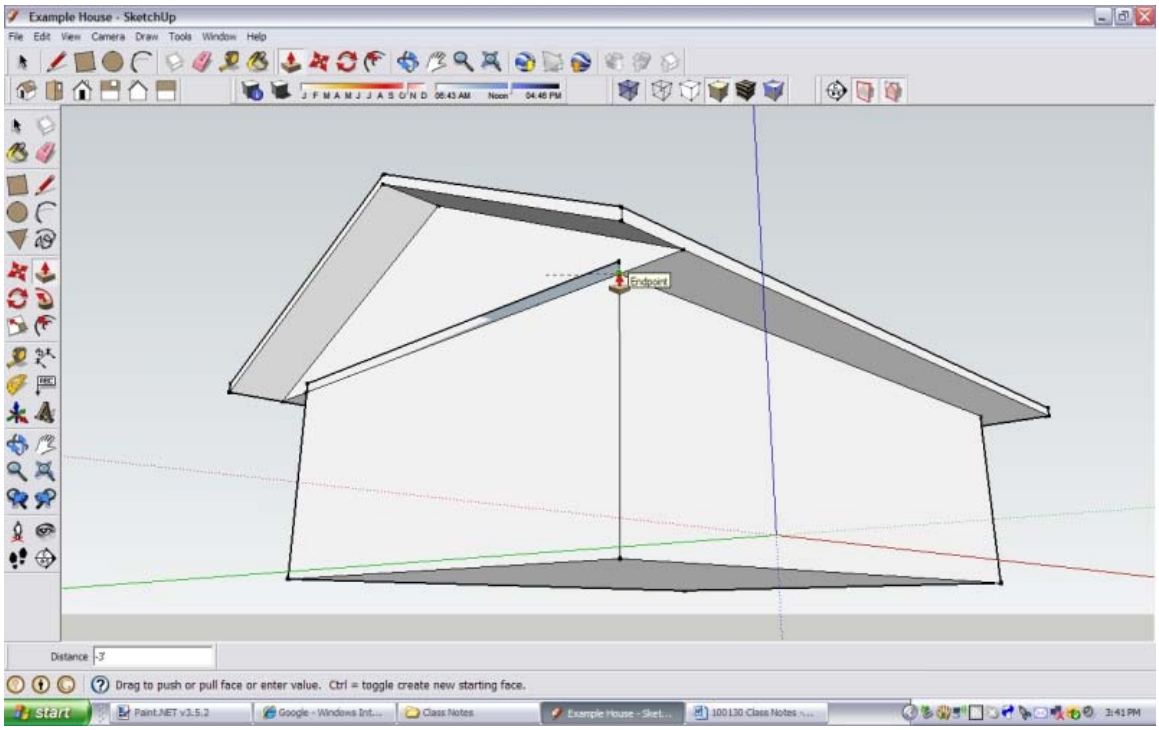
9. Now just delete the small section of line left over at the top (hit the spacebar to choose the “select” tool, click on the short piece of line so that it turns blue, and hit delete). Your model should now look like the one below.



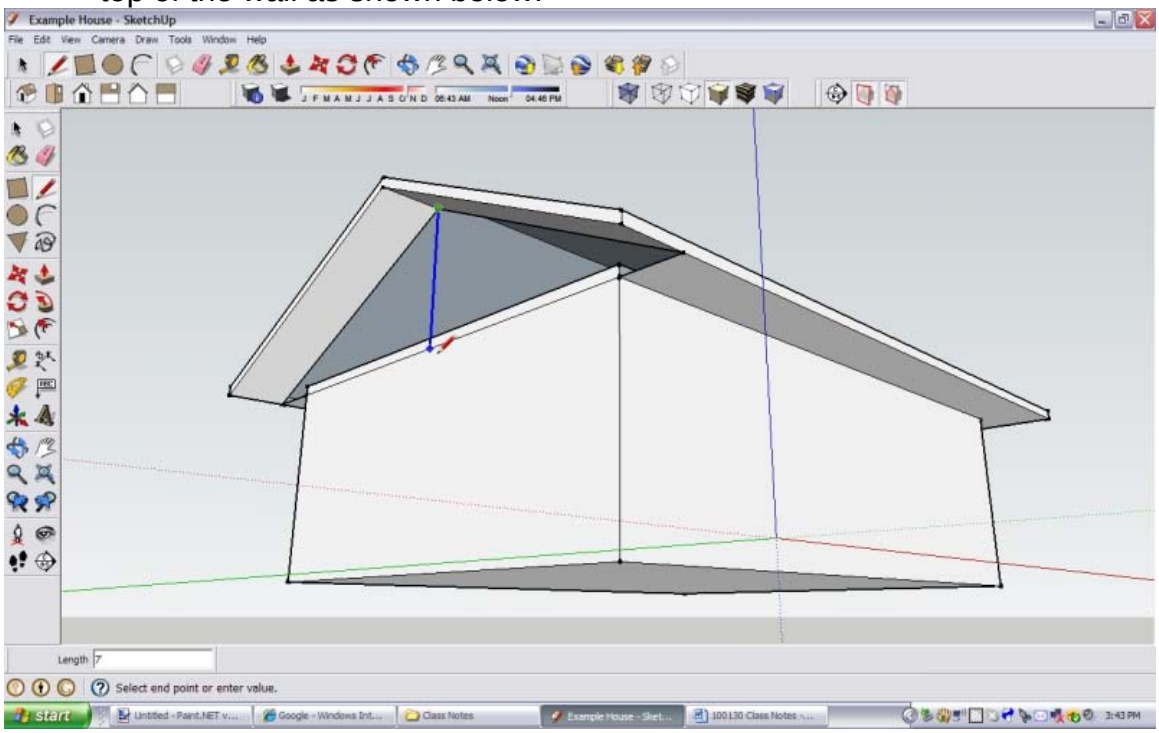
10. Now orbit your view so that you are looking at the roof end from below as shown below. Type P to choose the “Push/Pull” tool and click on the triangular surface of the roof gable as shown.



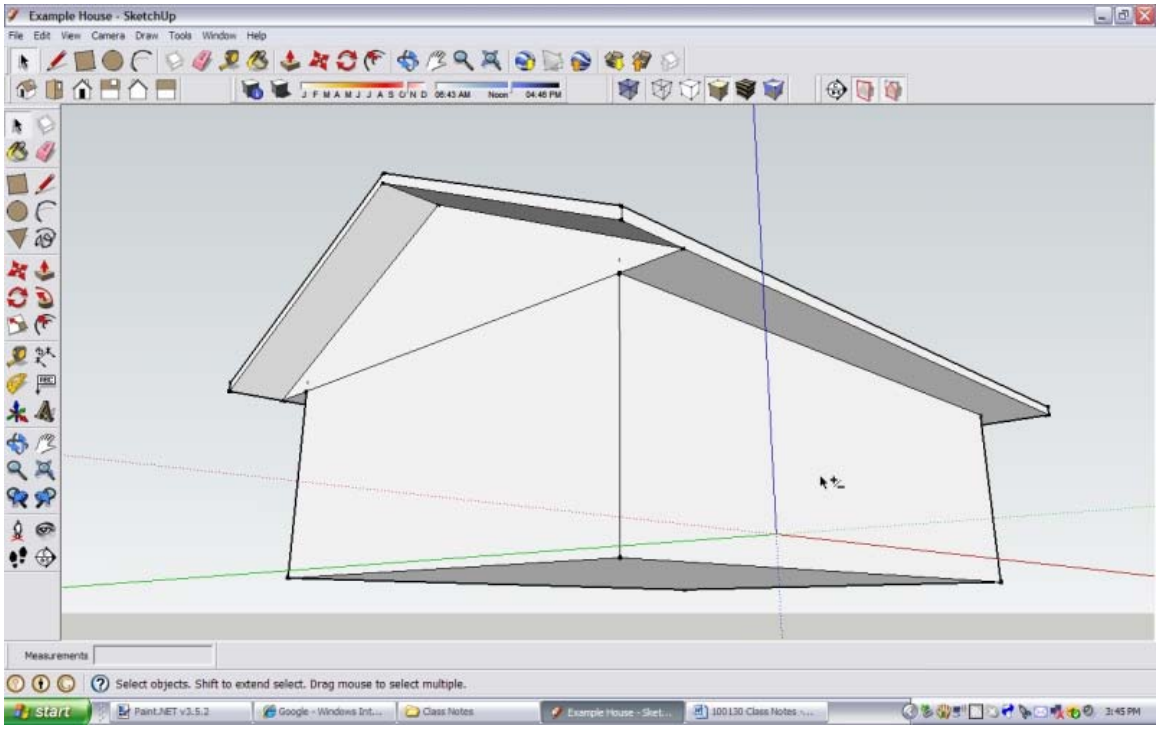
11. Now push the gable end back until your tooltip lines up with the endpoint at corner of the top of the west wall as shown below then release the mouse button.



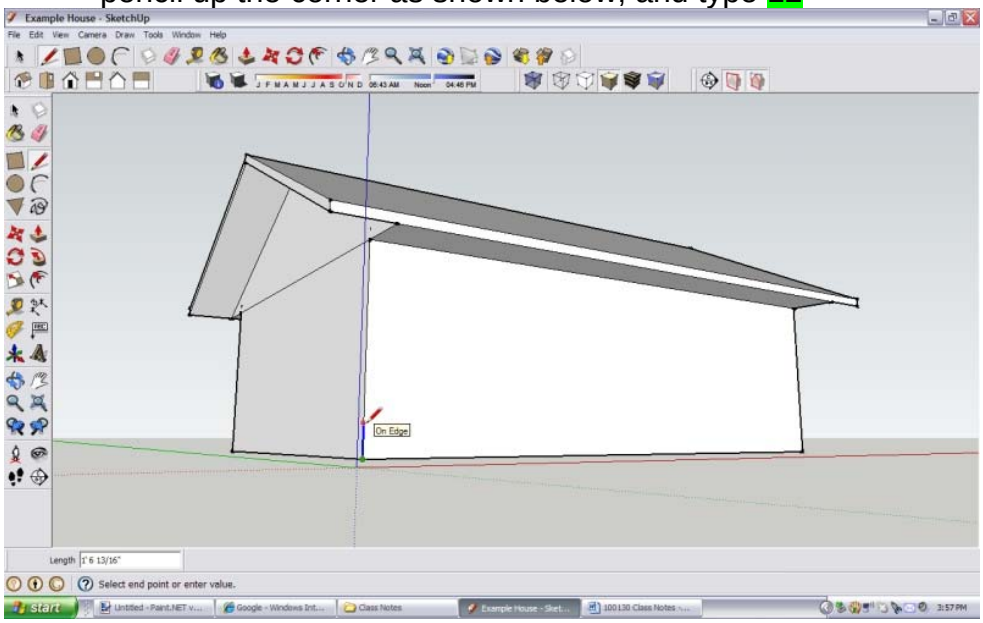
12. You will notice that the gable end disappears. I'm not sure why this happens but it's easy to get it back. Just draw a line from the peak of the roof where the gable end should be to the midpoint of the line along the top of the wall as shown below.



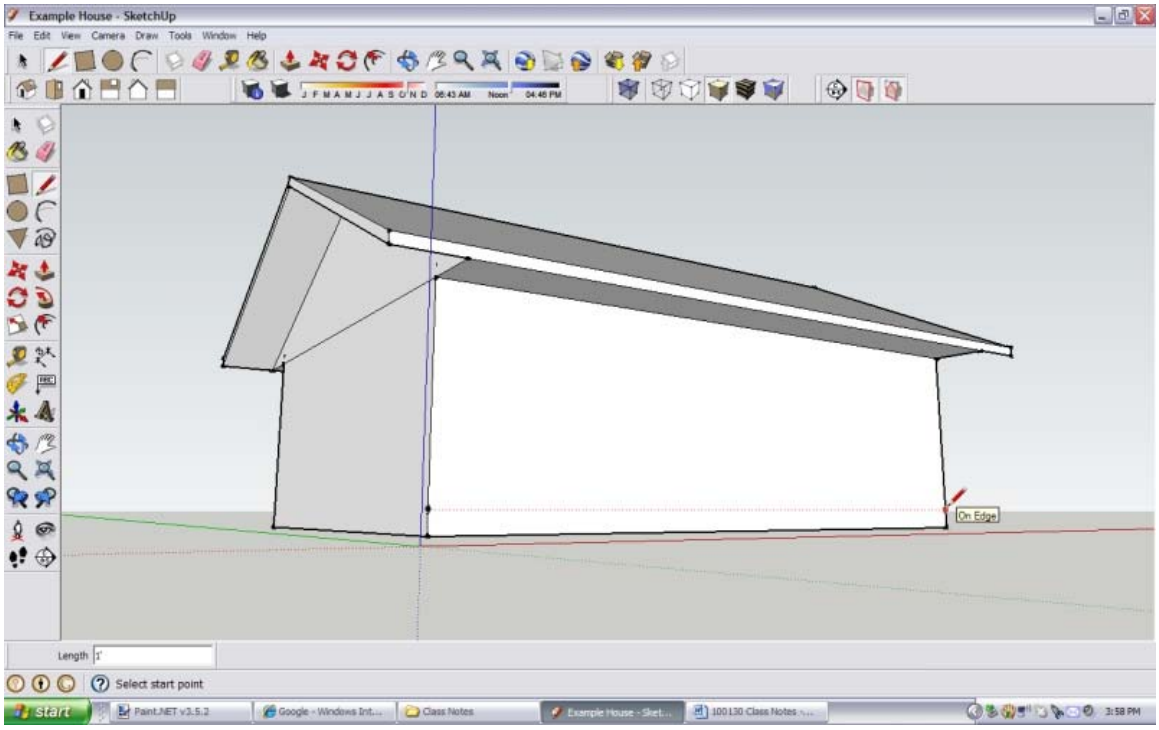
13. Now just delete the unnecessary lines so that your model looks like the one shown below.



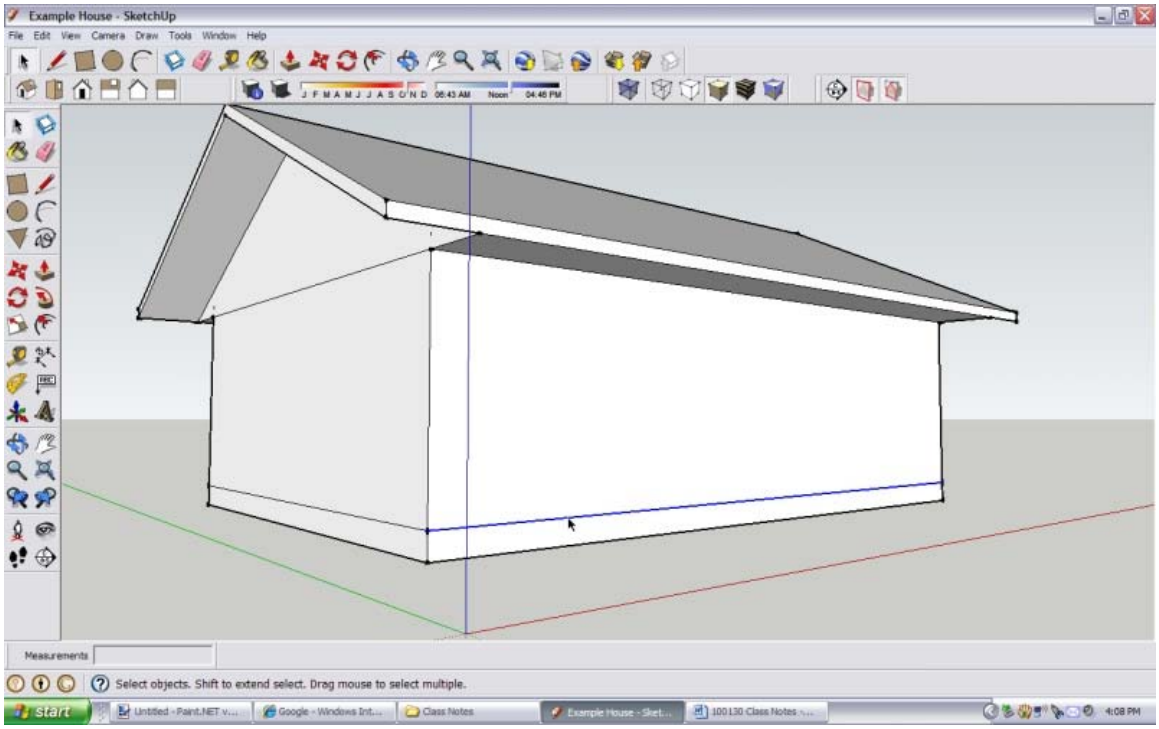
14. Next, orbit around to the other end of the building and repeat steps 1 through 13 so that the other gable end looks like this one. (Hint: remember that, if you make a mistake, you can always go to “Edit/Undo” or type Ctrl+Z as many times as you need to to get back to a good place and try again. Remember also to save you work regularly.)
15. Now we’re going to add a floor that is one foot above ground level. To start with, choose the line tool (L), click on the bottom corner, move the pencil up the corner as shown below, and type 12



16. Draw a line along the face of the building to the next corner as shown below.

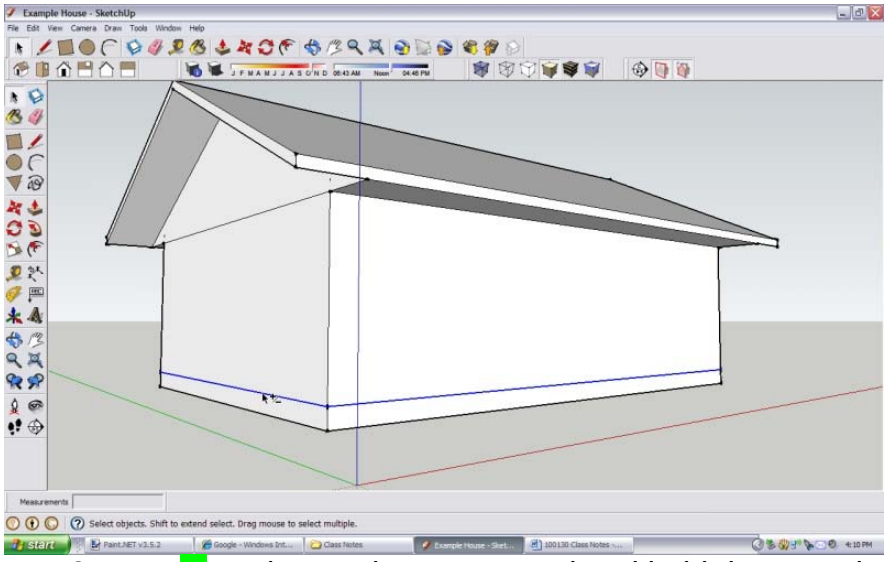


17. Now draw a line going the other way to the northwest corner as shown below.

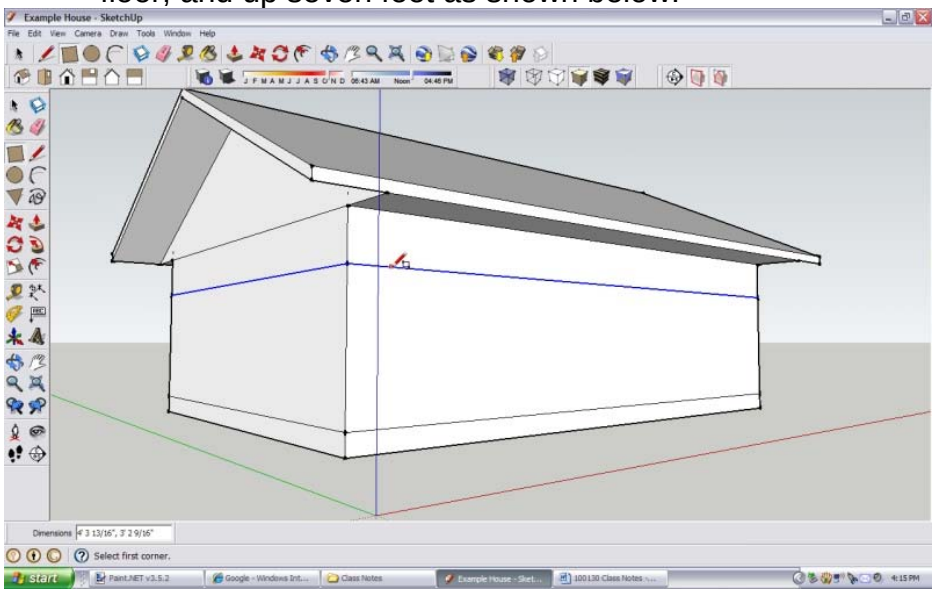


18. Orbit around to the opposite corner and repeat steps 16 and 17 to complete the floor level. Then come back to the where you're looking at the building from the south-west corner as shown above. Hit the spacebar

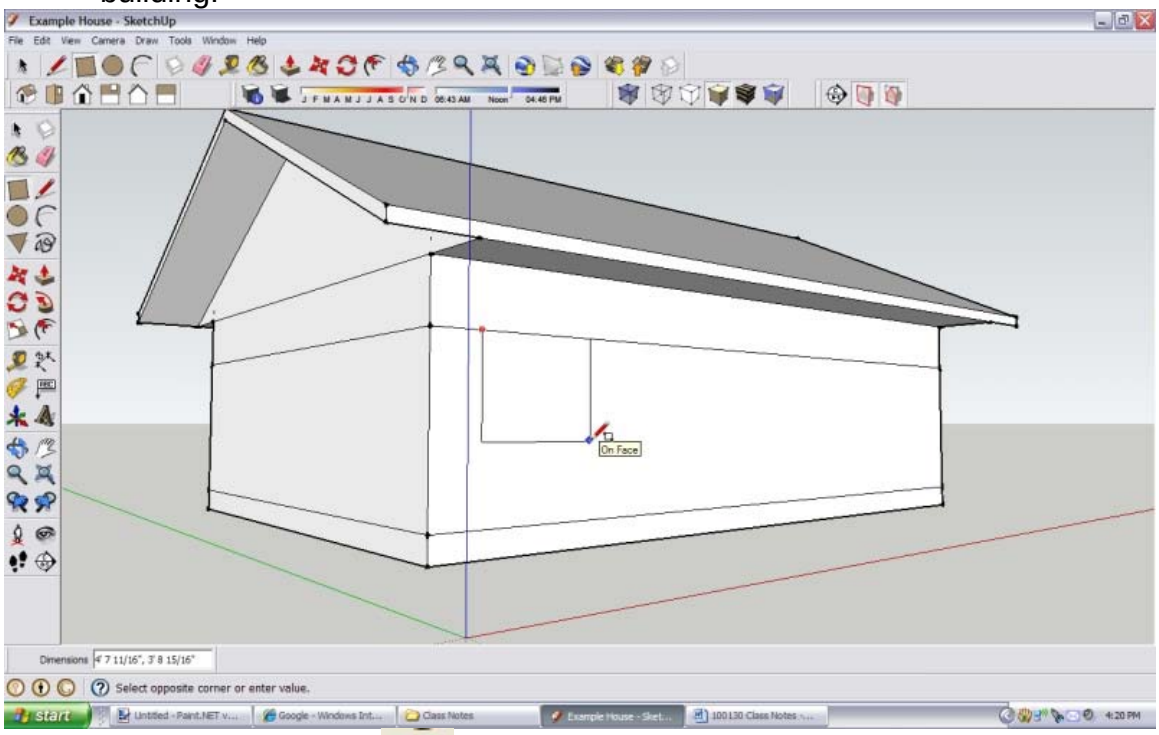
to choose the “select” tool and select the floor line along the south face of the building. Now hold the shift key and you should see a “±” sign appear next to the tooltip. This allows you to add or subtract other elements to the one that you already have selected. So now you can select the floor line along the west face as well (see below). We are now going to copy these lines and move them up seven feet to give us a reference to start drawing windows.



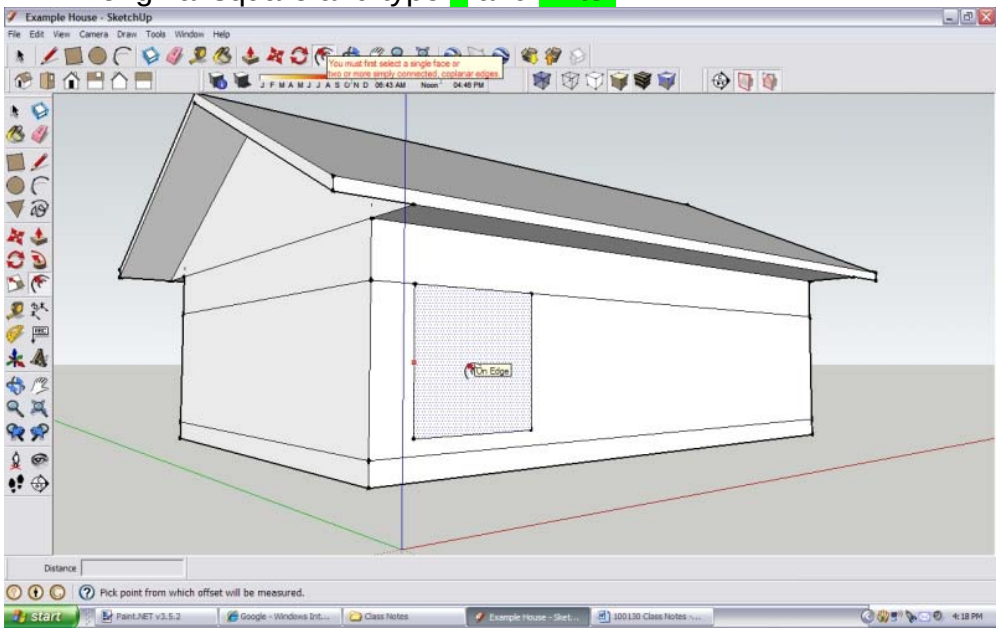
19. Type M to choose the “Move” tool and hold down on the Ctrl key (I think it’s the “Option” key on a Mac but I’m not sure). You should see a plus sign appear next to your tooltip. This tells you that you are copying the lines, not just moving them.
20. Click on the lines and hold both the mouse button and the Ctrl key. Move the new lines about half way up the wall and then let go of both the mouse button and the Ctrl key and type 7’ and hit Enter. You should now have new lines across the south and west walls of the building, parallel to the floor, and up seven feet as shown below.



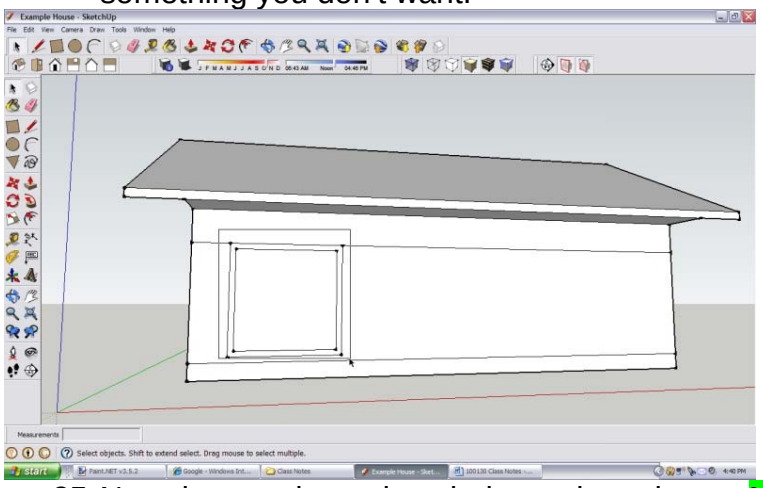
21. Now choose the “Rectangle” tool  and click on a point near the west end of the window line that we just drew on the south wall (see above).
22. Move the tool down and to the right as shown below and type 6’,6’ and Enter to draw a six foot by six foot square on the south face of the building.



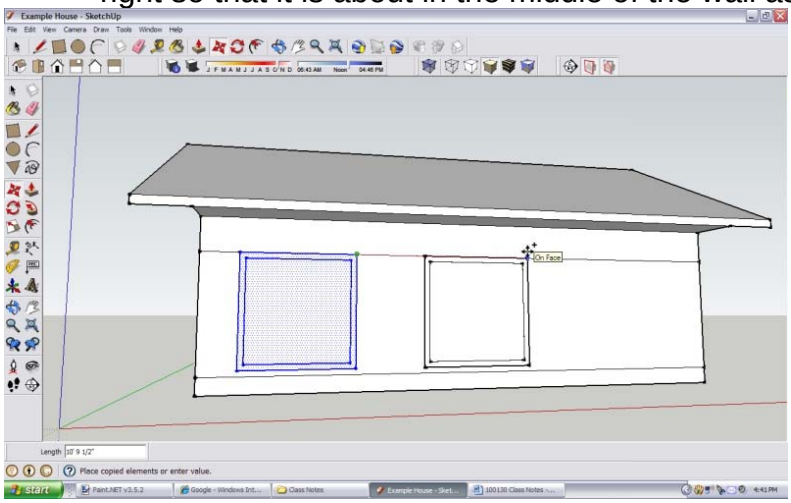
23. Take the offset tool  and click inside the square that you just drew as shown below. Move the mouse so that there is a square INSIDE the original square and type 4 and Enter.



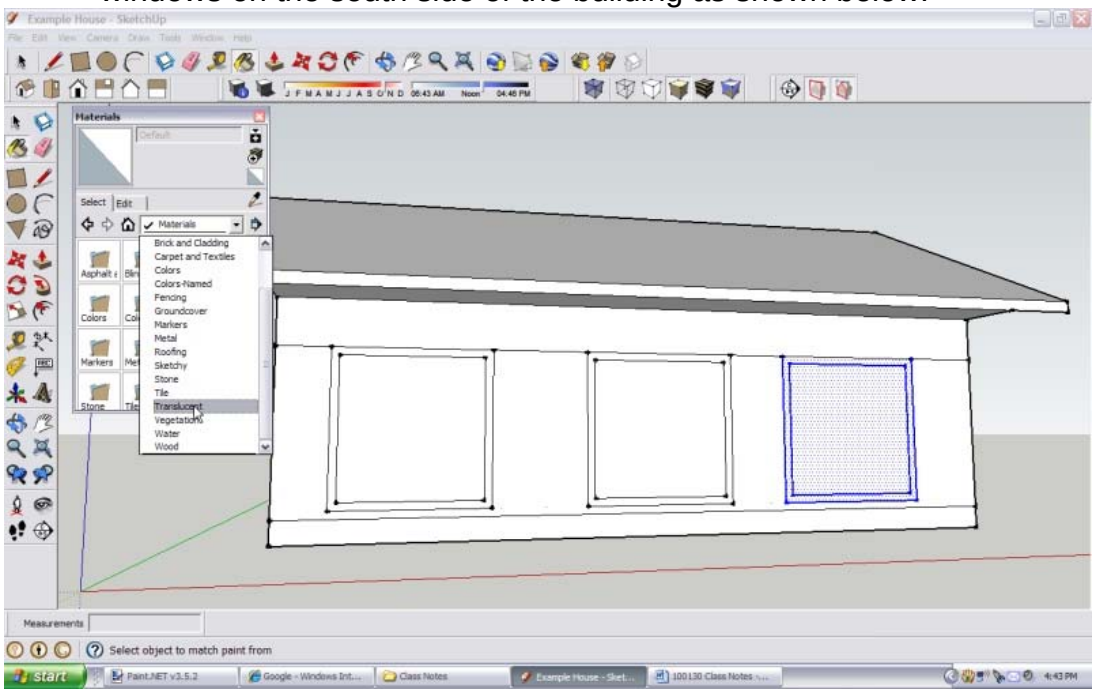
24. This gives us a four inch wide trim around our window as shown below. Now we will copy this window a couple of time across the south face of the building. First we need to select the window. To do this we need to be somewhat careful that we don't accidentally select anything else other than the window. So start by orbiting your view so that you are looking pretty straight on the window as shown below. Now choose the select tool by hitting the spacebar and draw a square around the window (start from the top left and move down and to the right. NOTE: if you draw a selection box like this starting from the left it only selects objects that are completely inside the box. If you draw a selection box starting on the right side it will select everything that enters the box at all (including things that you can't see behind walls, etc). This is a very useful tool but one that you have to use carefully otherwise you can select things that you don't want and move them or copy them without even knowing it). Try to keep the box as close to the window as possible so that you also don't accidentally include something you don't want.



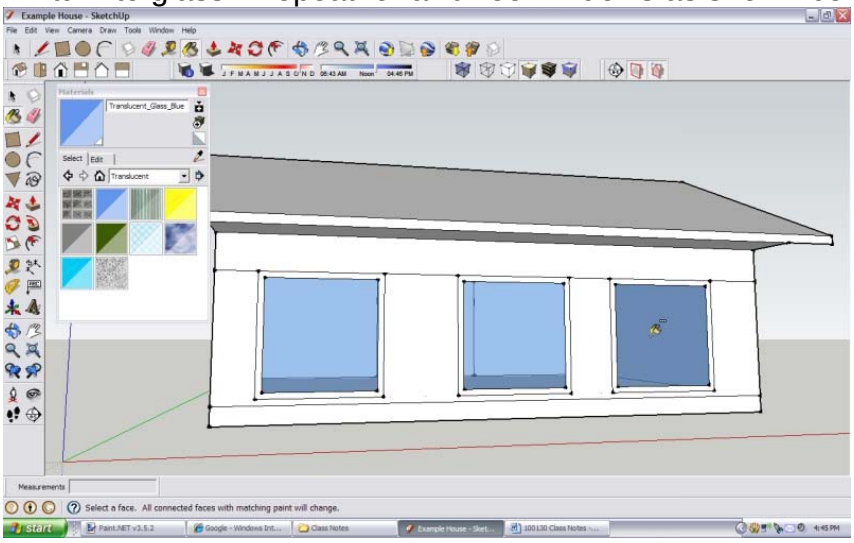
25. Now that you have the window selected, type M for the "Move" tool, hold down on the Ctrl key, click on the top right-hand corner of the window, hold Ctrl and the mouse button, and copy the whole window over to the right so that it is about in the middle of the wall as shown below.



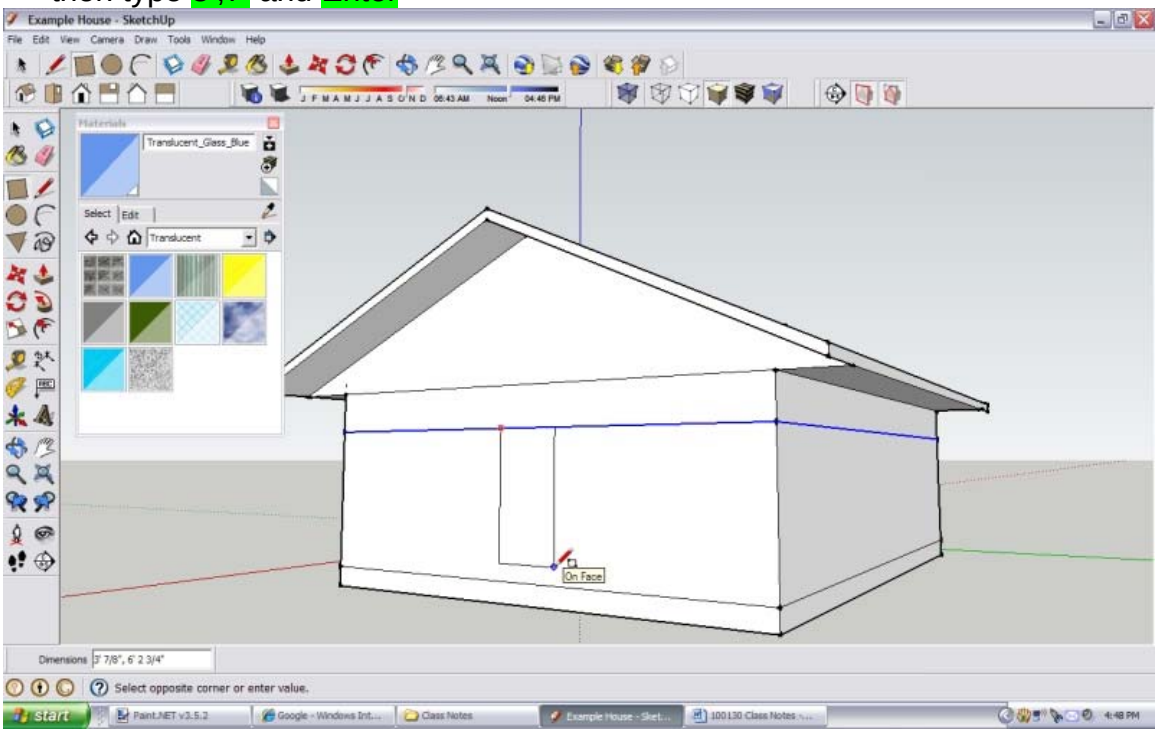
26. When you get it where you want it release the mouse button and Ctrl key. You should find that your new window is now selected (blue). Now you can repeat the last step and copy it again so that there are three big windows on the south side of the building as shown below.



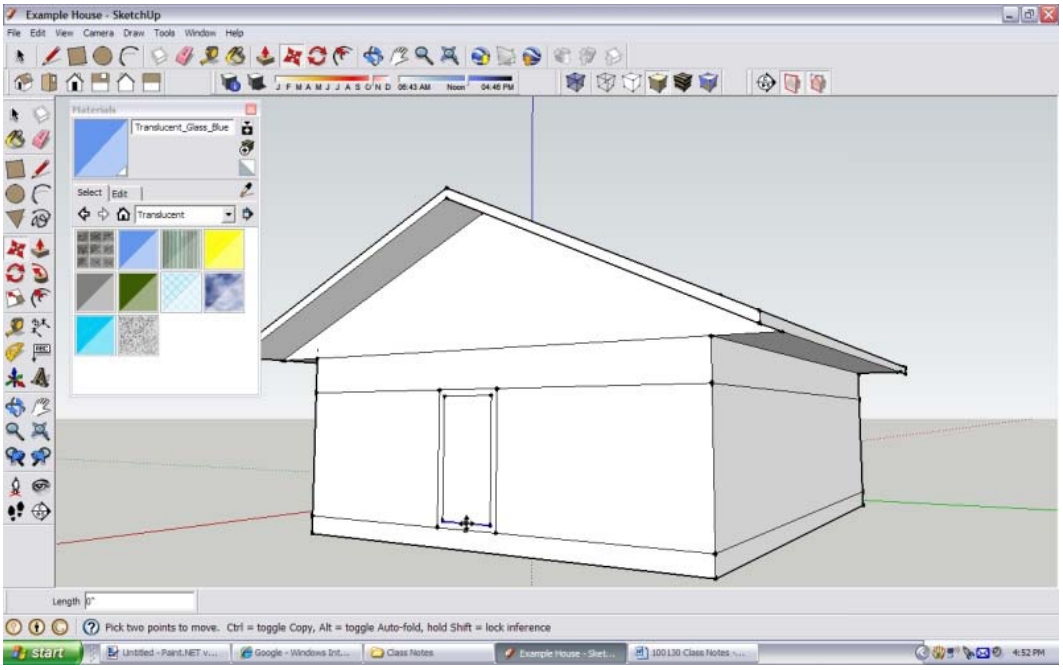
27. Now let's put glass in them. First you need to unselect the last window. To do this hit the spacebar and click somewhere outside you model and the window should turn black. Now choose the "Paintbucket" tool  and the "Materials" menu should appear near the top left as shown above. Click on the arrow next to the box that says "Materials", scroll down the list of material types, and click on "Translucent".
28. Choose the type of glass that you want and then move your paintbucket over to the inside square of the first window. Click and the square should turn to glass. Repeat for all three windows as shown below.



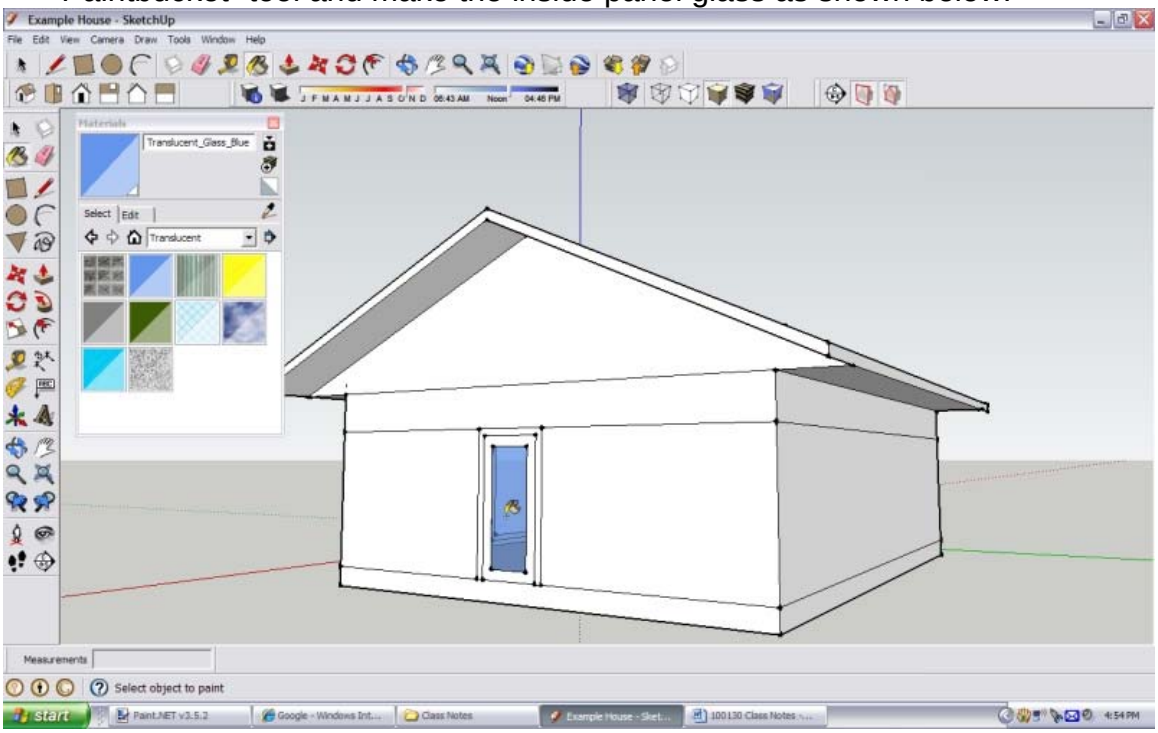
29. Now we're going to add a door on the east side so orbit around so that you can see that wall as shown below. Choose the "Rectangle" tool, click near the middle of the window reference line, move down and to the right, then type 3',7' and Enter



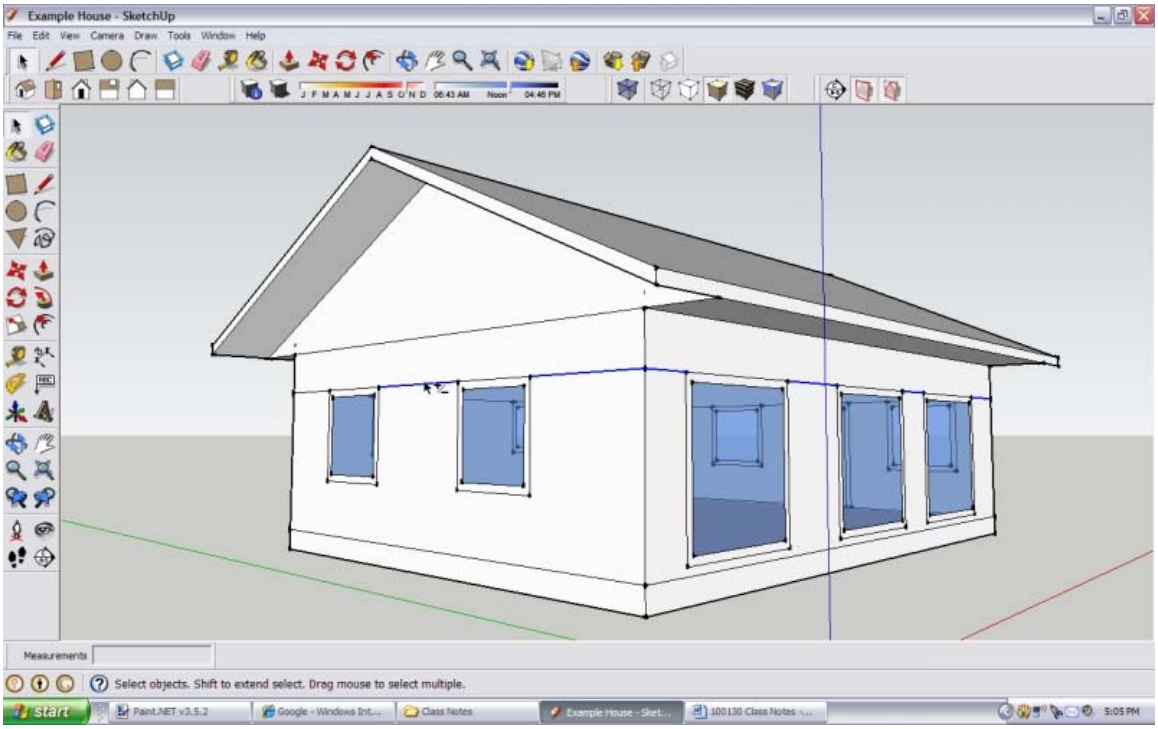
30. Take the "Offset" tool, click inside the rectangle you just drew, move the mouse so that the new rectangle is inside the original, type 4 and Enter.
31. Type M for the "Move" tool, click on the midpoint of the bottom line of the inside rectangle as shown below, and drag it down to the floor. This gives us a door with a four inch trim around it.



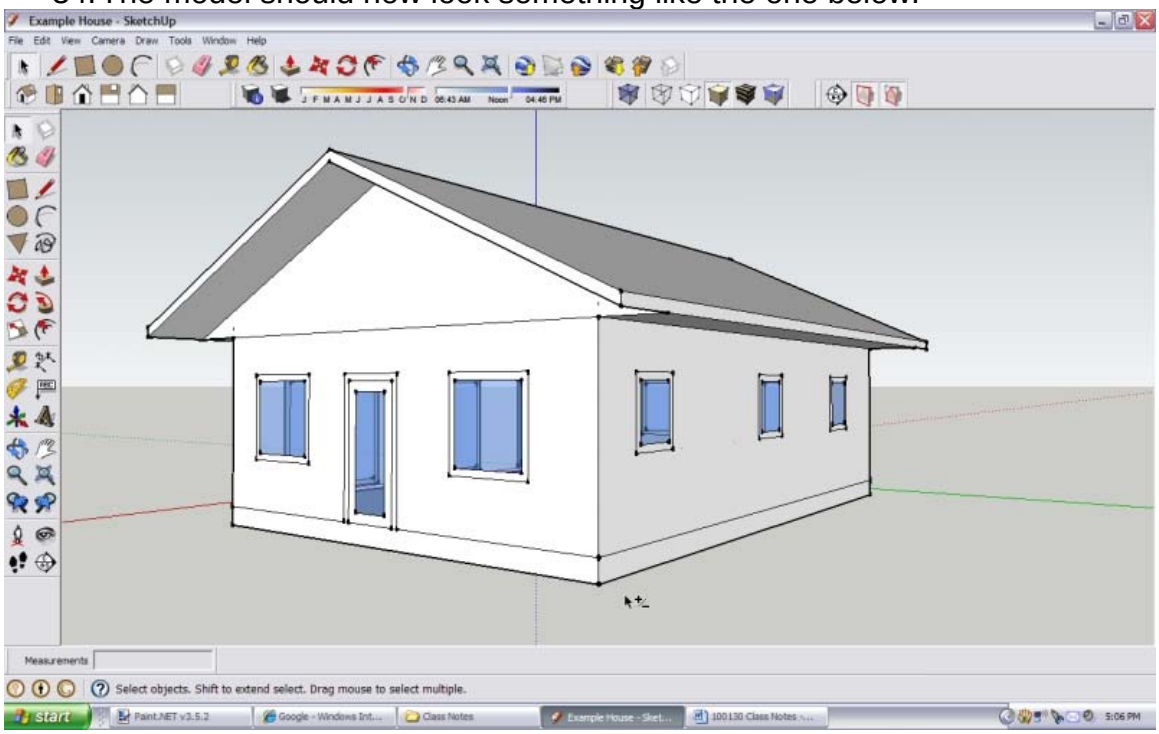
32. Take the “Offset” tool again and click inside the door rectangle, move the mouse so that the new rectangle is inside the original, type 6 and Enter. Now we have a door with a six inch frame around it. Take the “Paintbucket” tool and make the inside panel glass as shown below.



33. Continue to add windows to the walls of the building as you choose. Then go around and select and delete the left over sections of the window reference line as shown below.



34. The model should now look something like the one below.



35. Now, for fun, you can add different colors and materials to the roof, walls, and trim of your model using the “Paintbucket” tool. Below is what mine ended up looking like.

This completes this part of the model. In the final paper we will learn how to choose a site from Google Earth®, import the site into SketchUp®, perform a sun study on the model, and upload the model back to Google Earth®.