

3 Clubhouse

In this chapter, we'll use a picture of a clubhouse (shown on the left below) and make a model from it (shown on the right).



We'll make the same model twice, using two different methods: texture positioning and Photo Match.

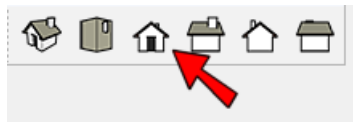
Clubhouse with Texture Positioning

This method is like what you did for the striped box and bus. But since the clubhouse model isn't just a basic box, there's a little more you need to do, to fit the model to the picture.

Paint the First Face

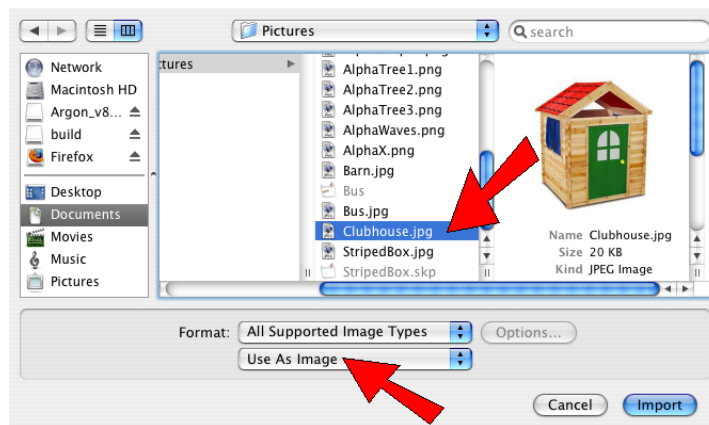
With the striped box and the bus models, you created the basic model first, then painted the picture onto the faces. This time, we'll bring in the picture first, and fit the model to it.

1. Open a new file, and switch to Front view.



If you don't see this toolbar, choose View / Customize Toolbar and drag the Standard Views toolbar onto the main toolbar.

2. Use Import to bring in the "clubhouse.jpg" picture. This time, check Use as image.



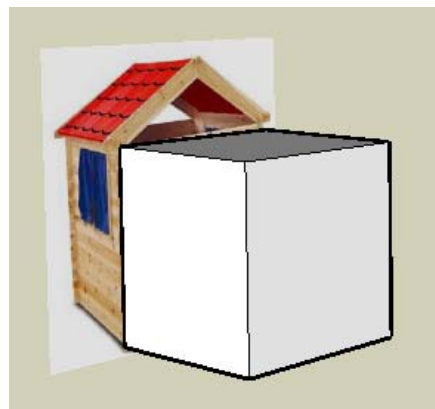
- Place the picture by clicking the first corner then clicking again for the second corner.



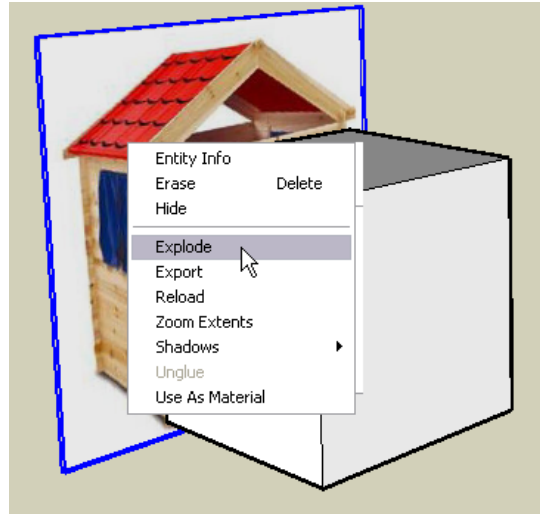
- Draw a rectangle right on the picture where the front of the house is (more or less). The edges won't exactly line up with the picture, but you can make it pretty close.



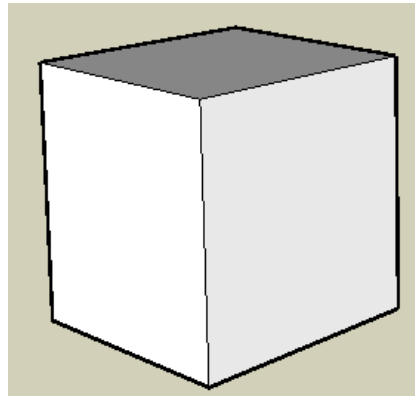
- Orbit around a little and Push/Pull the box forward, making it about as deep as you want the clubhouse to be.



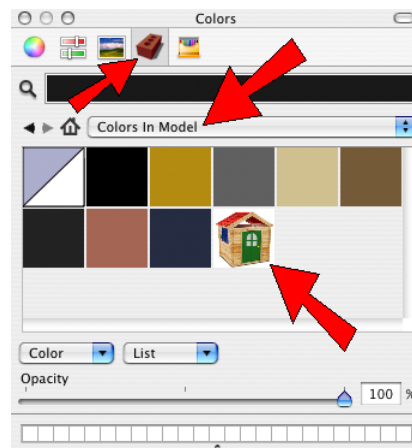
6. We don't need this picture sticking out of the back of the house, but we can't erase it just yet. First, **right-click on it and choose Explode**.



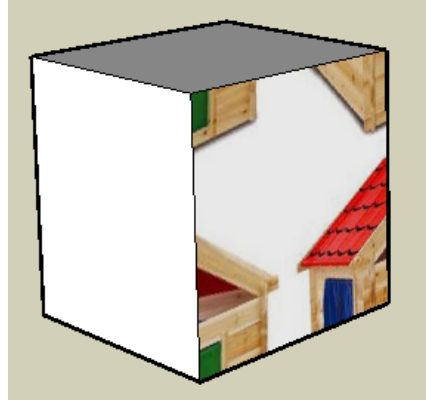
7. Now you can erase the picture. It's easiest to erase each of its four edges.



8. The reason for exploding the picture is to add the picture to the Colors window. Open "Colors in Model" to see it.



9. Click on the thumbnail, and paint the front face of the box.



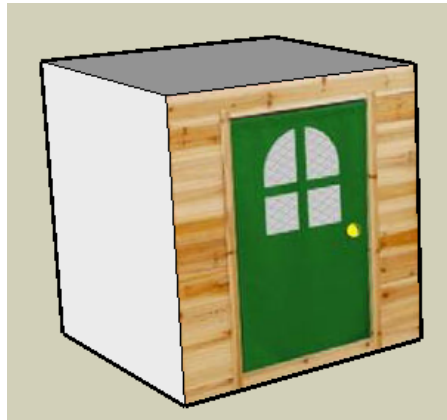
10. Use texture positioning, free pins, and place the four yellow pins on the corners of the square part of the face. (These four corners are easy to find on the picture.)



11. You know what to do - drag each pin to a corner of the box.



12. Choose Done, and here's the front of the clubhouse.



Change the Model to Fit the Picture

Like we did with the bus, we have to make some changes to the box so that it matches the picture. There are lots of ways you can get the same final shape, but I think this way is the easiest.

1. First, use Push/Pull to make the top higher. Stop right when you get to the tip of the pointed roof.



2. Then pull out the right side until you hit the edge of the roof.



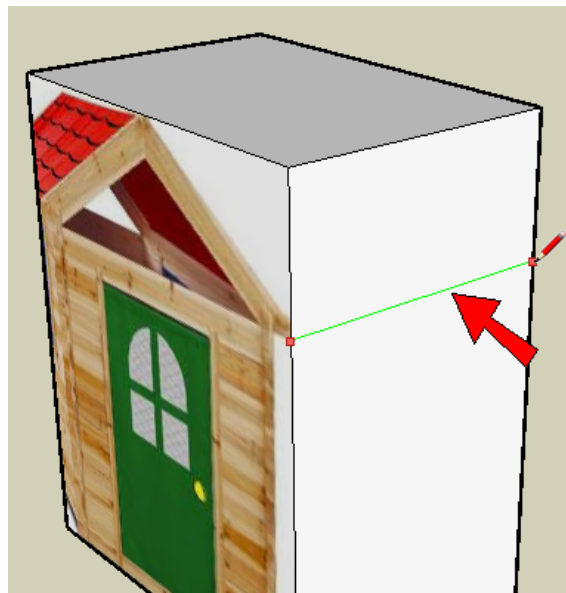
3. On the left side, double-click on the side face. This will pull the face out the exact same amount as the right side (we want this house to be symmetric - exactly the same on both sides).



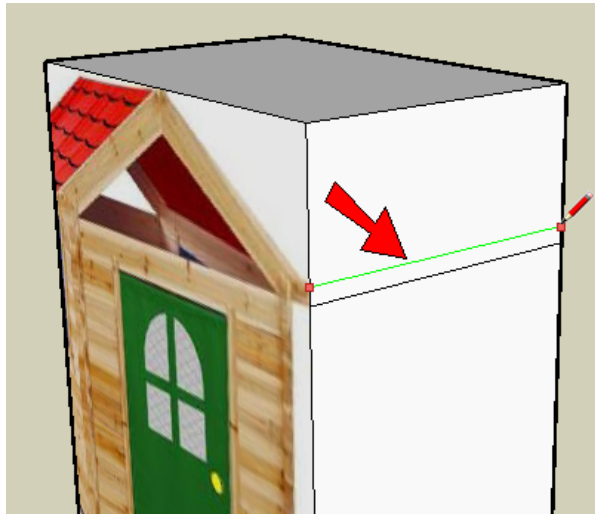
- Next, activate Line and click the first point here, where the bottom of the roof meets the right side of the box.



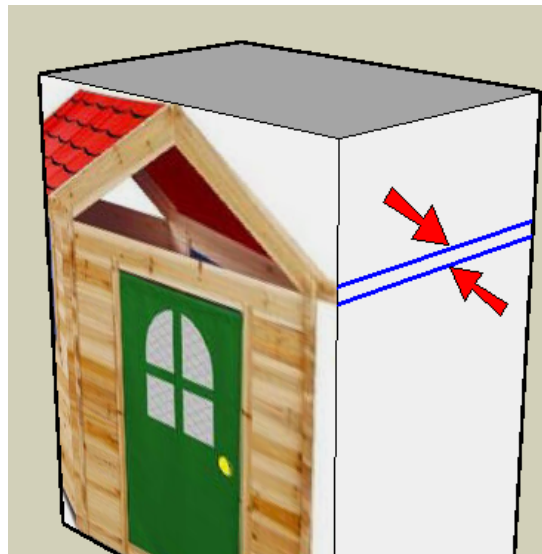
- Finish the line like this, straight to the back of the house.



6. Add a similar line where the top of the roof meets the right side of the box.

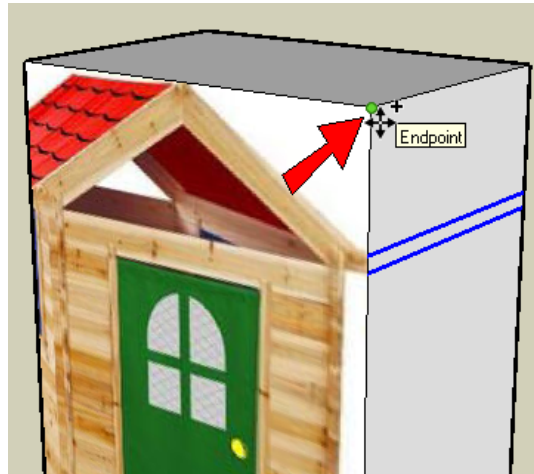


7. The same lines need to be drawn on the left side, too, so we'll copy them. Select both lines. (Remember to press the Shift key when you want to select more than one object.)

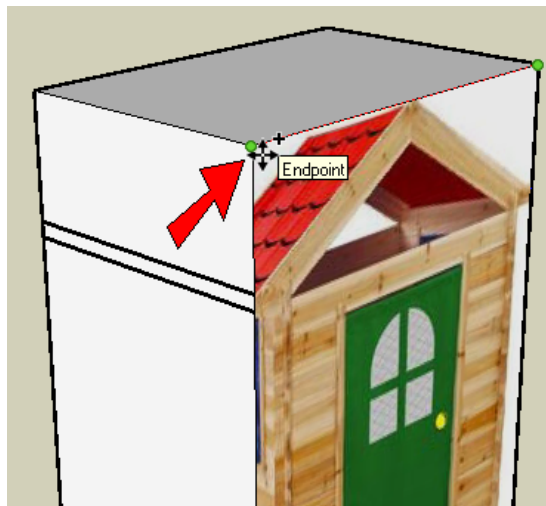


You could also just select the narrow rectangle between those two lines, instead of clicking the two lines separately.

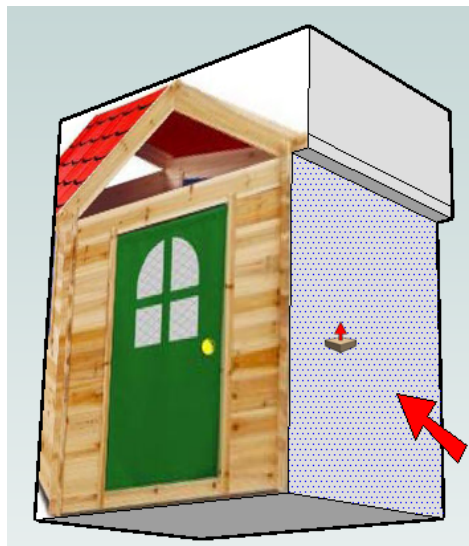
8. Activate Move and press Option for copying. Click this corner point for the first move point.



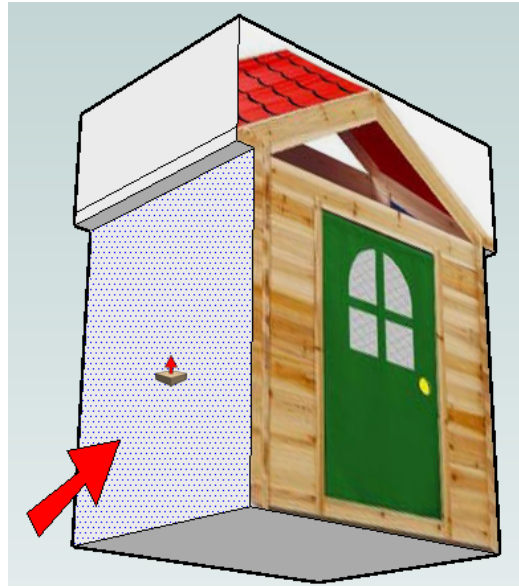
9. For the second move point, click the same corner point on the other side. The two lines should now appear on the left side of the box.



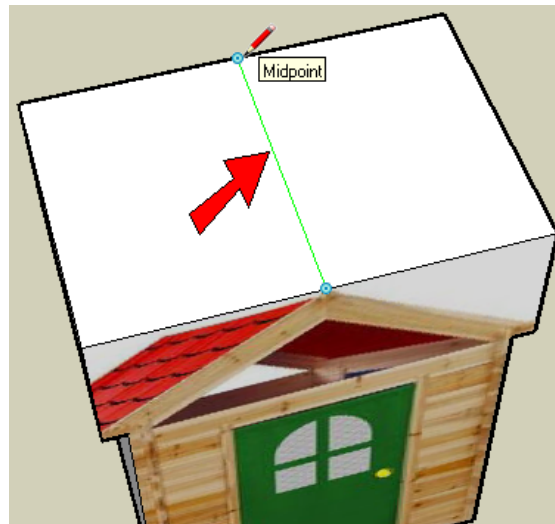
10. Now click Push/Pull again and push in this face on the right side, stopping when you meet the edge of the picture.



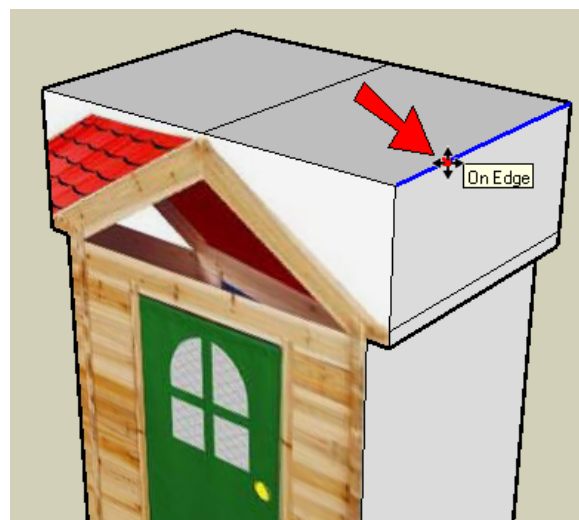
11. Double-click the same face on the left side to push it in the same distance.



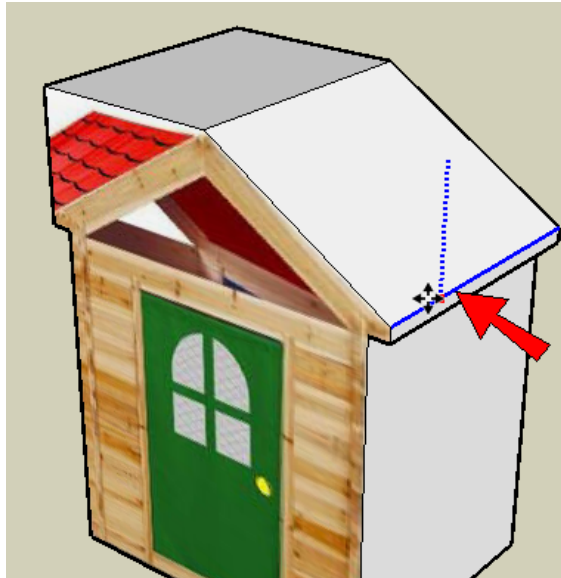
12. Now we can make the roof. Start with a line between midpoints across the top, like this:



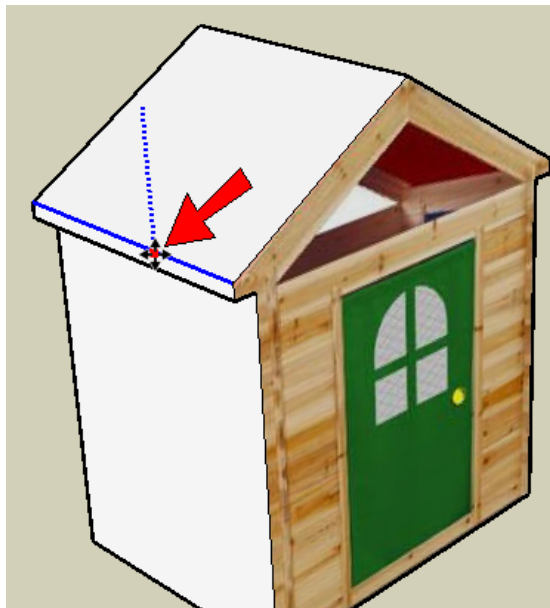
13. Now activate Move and click this edge:



14. Move the edge straight down (in the blue direction) like this:

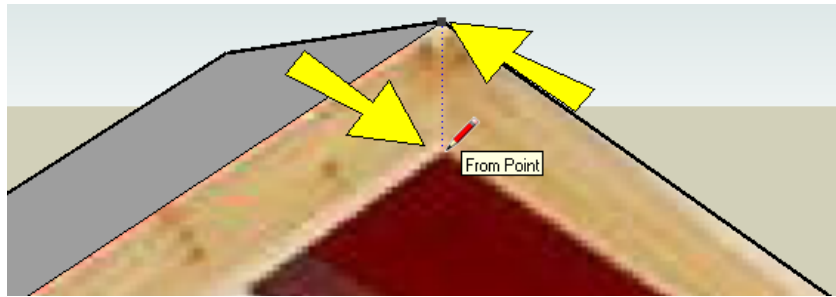


15. Do the same for the roof edge on the other side.



Once you're finished making this shape, you might see that the picture doesn't quite fit perfectly. So you can use texture positioning again and move the pins just a tiny bit, to make the picture fit just right.

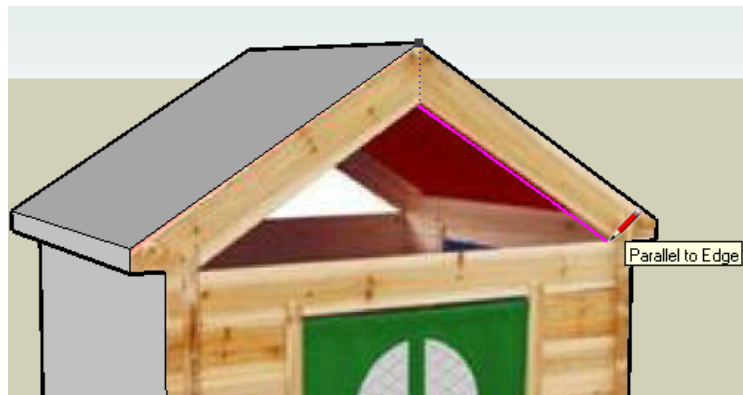
16. The last thing to do with the model is to cut out the triangular hole below the roof. We'll need to trace the triangle directly on the front face. Activate Line, and hover over the point at the tip of the roof. Then click the first point of the line straight down from the tip of the roof.



17. This line should be parallel to the roof. So before you finish the line, hover first over this edge.

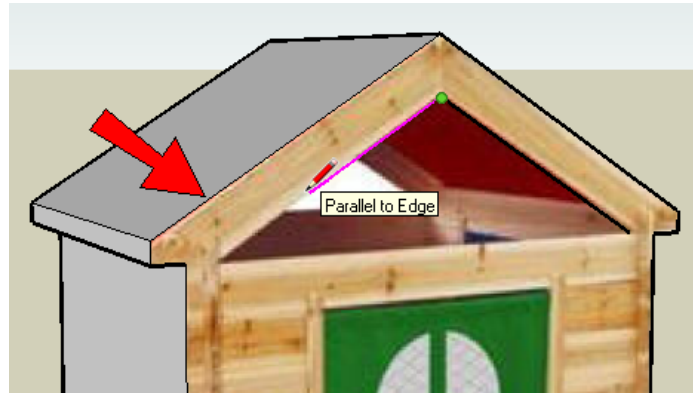


18. Make the line parallel (it will turn magenta) and click when you get to the corner of the hole.



19. Press the Esc key so that you won't start the next line from this point. We'll make the next line from another point.

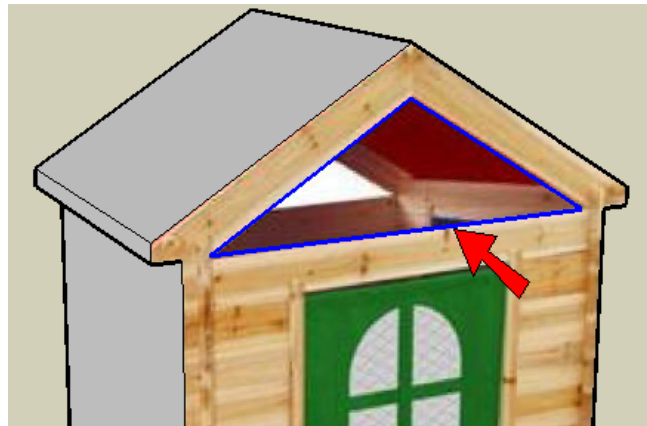
20. Start the next line at the same top point, and make it parallel to this edge:



21. Keep the line parallel, and stop when the endpoint is in the red direction from the other line. (It's hard to see in this picture, but there is a red dotted line where the arrow is pointing.)



22. Finish the triangle with this edge. All of the triangle edge are shown below in blue.



23. Now activate Push/Pull and click the triangle face.



24. End the Push/Pull by clicking anywhere on the back of the house.



Now you should have a hole under the roof.



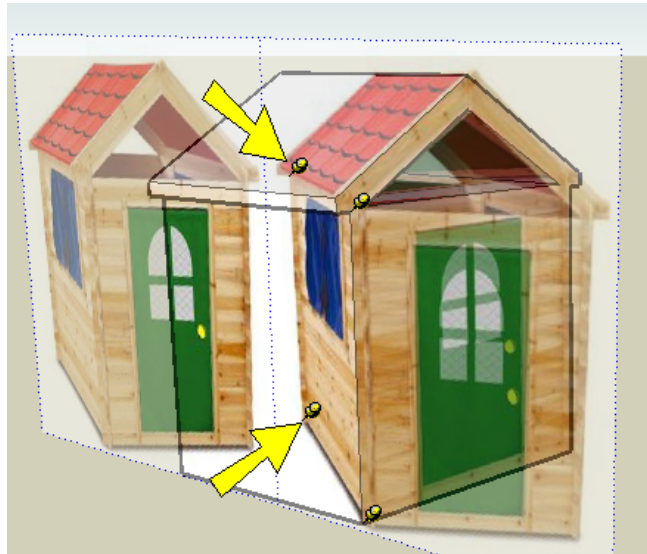
Painting the Rest of the House

This part will be familiar since you did it with the striped box and the bus.

1. Use the eyedropper to click on the front of the house to sample the picture. Then click on this face on the left side.



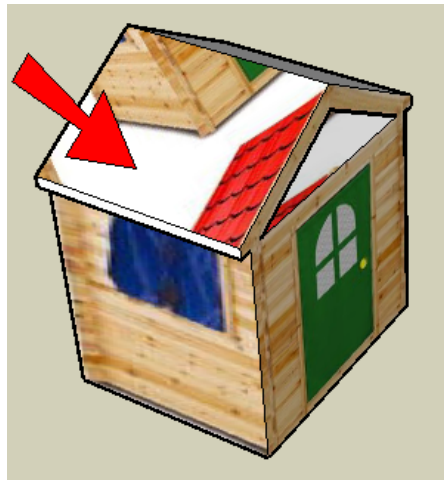
2. Start texture positioning, and place these two pins at the corners. (The other two pins should already be in the right place.)



3. **Drag the pins to the correct corners, and choose Done.**



4. Do the same thing to paint the left side of the roof.



5. To position it, you should only have to move and drag two pins.



6. Do the same thing to paint this small face on the side of the roof.



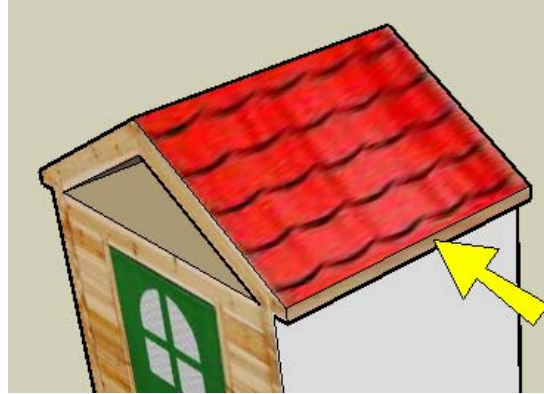
7. For the inside faces of the hole under the roof, pick a solid color and paint the three faces.



8. Now paint the right side of the roof. It might be easier to use the eyedropper, or just click the thumbnail of the picture in the Colors window. Either way, you'll have to position the picture.



9. Paint this little face:



10. And for the last face, first use the eyedropper on the left side, then paint the right side.



11. Save the model. You can name it “Clubhouse1” since we’ll create another clubhouse model in the next section.

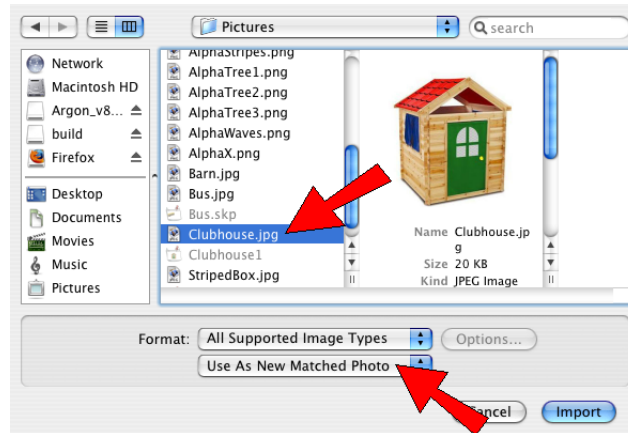
STOP AND HAVE ME CHECK YOUR PROJECT. AFTER CHECKING, PLEASE UPLOAD YOUR CLUBHOUSE THROUGH GOOGLE CLASSROOM

Clubhouse with Photo Match

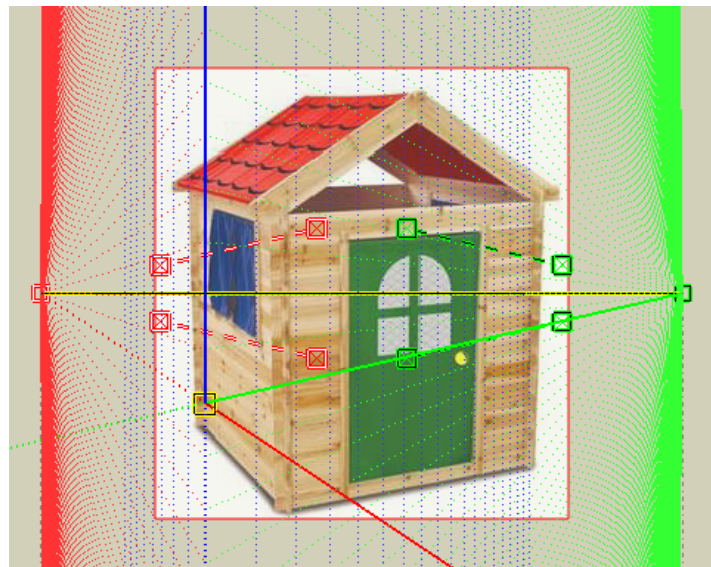
Now we'll make the same exact model, using a different method called "Photo Match." Photo Match is very cool - you bring in a picture, change the model axes right on the picture, then draw your edges and faces right on the picture. It sounds confusing, but it's really not once you try it.

Setting the Photo Match Axes

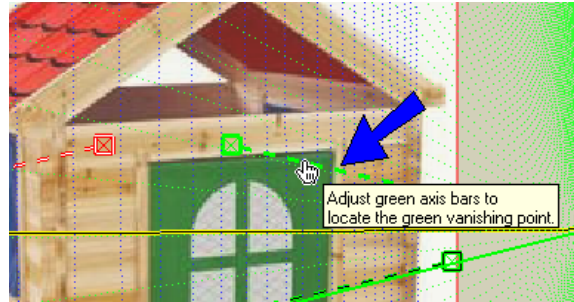
1. Start a new file.
2. Go to File / Import, and click the same "clubhouse.jpg" picture you used before. On the right side, make sure that Use as New Matched Photo is checked.



This is what your model should look like: lots of red, blue and green lines.

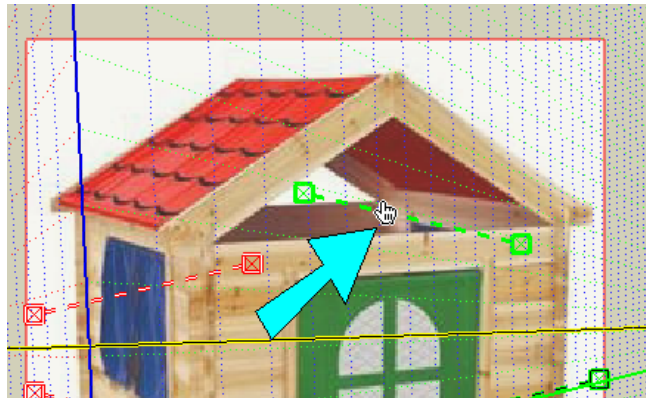


3. Hover your mouse over this green bar - the one with two green squares at either end. The popup tells you that this is the green axis bar, and you need to adjust it.

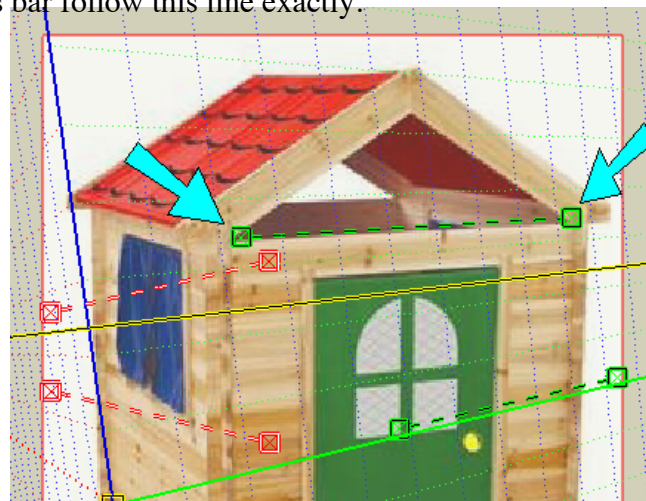


Here's what this means: There are two green axis bars and two red axis bars. What you do in Photo Match is to move these four axis bars, so that they tell SketchUp where the green and red SketchUp axes are. When the SketchUp axes are set to match the picture, you can draw straight lines right on the picture. Still confused?

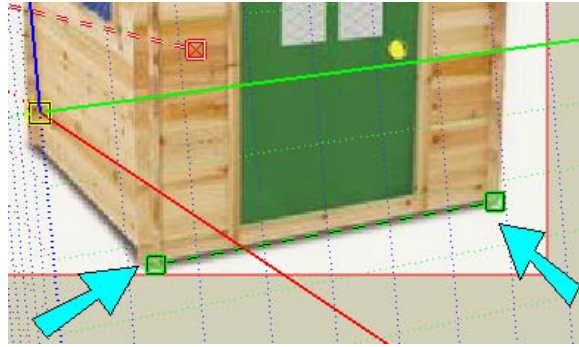
4. When your mouse is over the green bar, the cursor symbols is a hand. This means you can move the bar around.



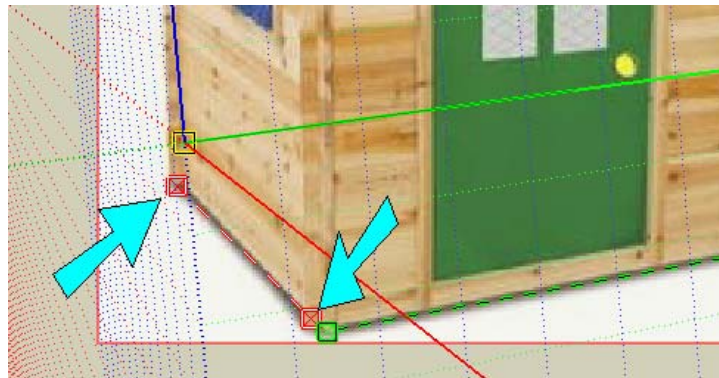
5. Move the bar to the top edge of the house, above the door, and click and drag the green squares at the ends, to make the axis bar follow this line exactly.



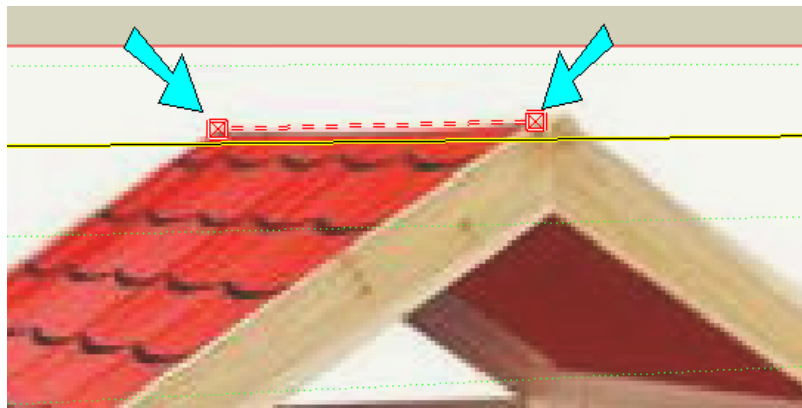
6. Move the other green axis bar down here, and drag the green squares so that the bar follows the bottom of the house.



7. The red axis bars go in the other direction. Place one here, along the bottom:

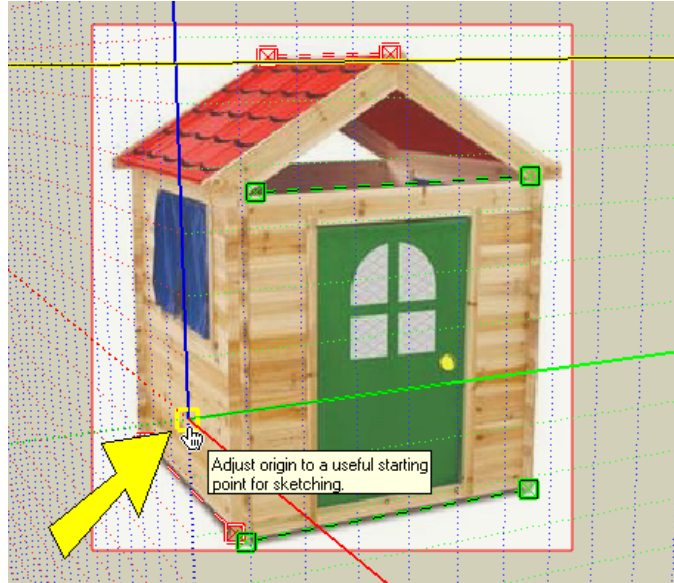


8. And place the other red axis bar here, along the very top:

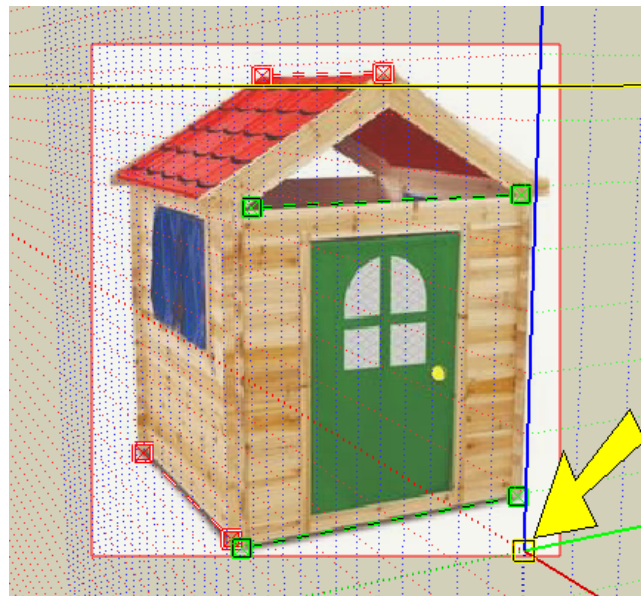


Maybe you figured out that there are lots of lines in the picture you could use for placing those red and green bars. But it's a good rule to place axis bars as far apart as they can go on the picture. It's also best to place the bars along long lines, instead of short ones.

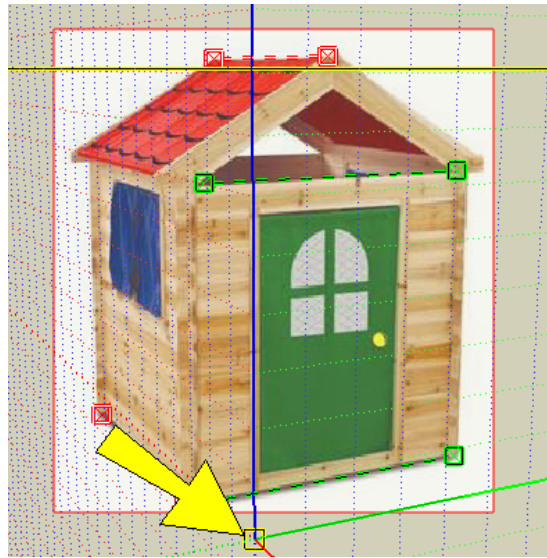
9. We're not quite done yet. Hover over the yellow square. This sets where the origin is - the point where the red, green, and blue axes all meet.



10. If you placed your green and red bars correctly, the blue axis should automatically match the vertical lines in the picture. Test this by dragging the origin over here - the blue axis should match the right side of the house.

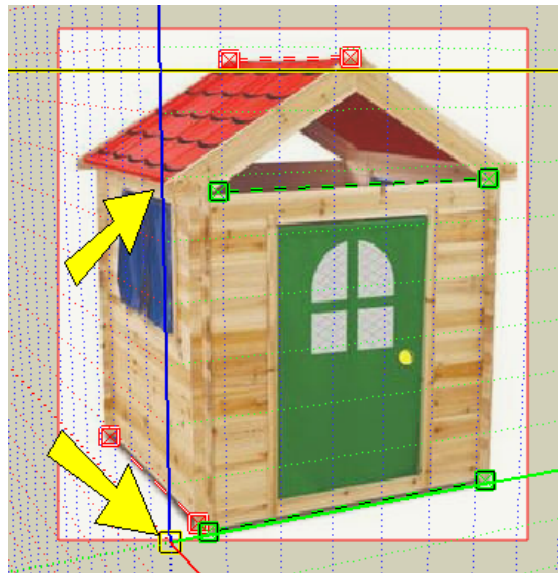


11. Move the origin here to see if the blue line matches the side of the door.

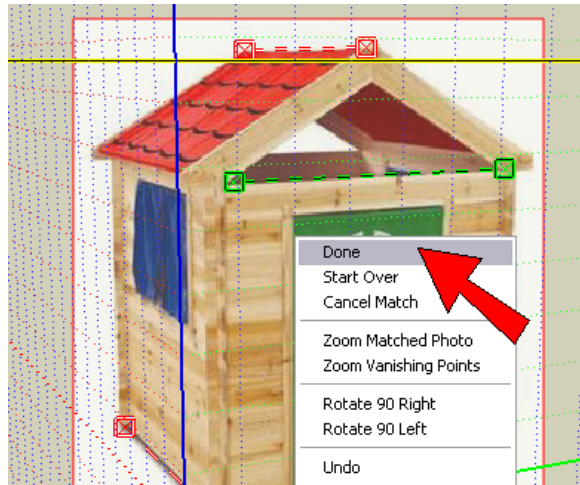


12. If the blue lines don't look OK, then adjust the green and red bars. You might have to zoom in really closely when you place the squares at the ends.

13. To finish setting the axes, place the origin here. It should be along the line of the bottom of the house, and the blue line should meet the side of the roof.



14. Right-click on the picture and choose Done.

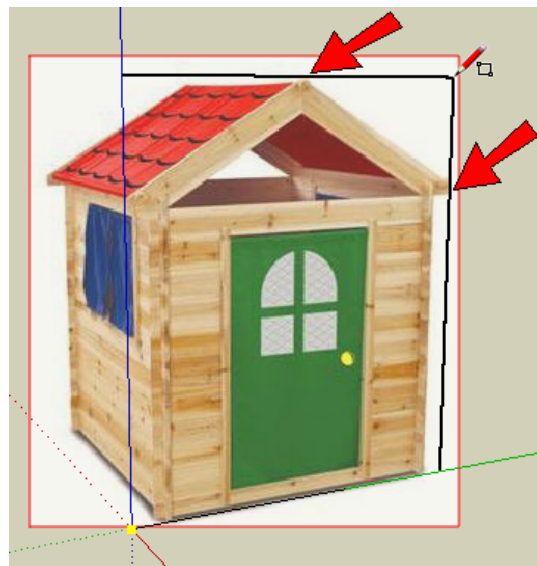


Now the green and red SketchUp axes follow the house exactly. (If you turned off your axes, choose View / Axes to turn them on.) The Photo Match picture always has a red border around it.



Change the Model to Fit the Picture

1. Activate Rectangle. Start the rectangle at the origin, and make it so that the top hits the tip of the roof, and the right side hits the edge of the roof.



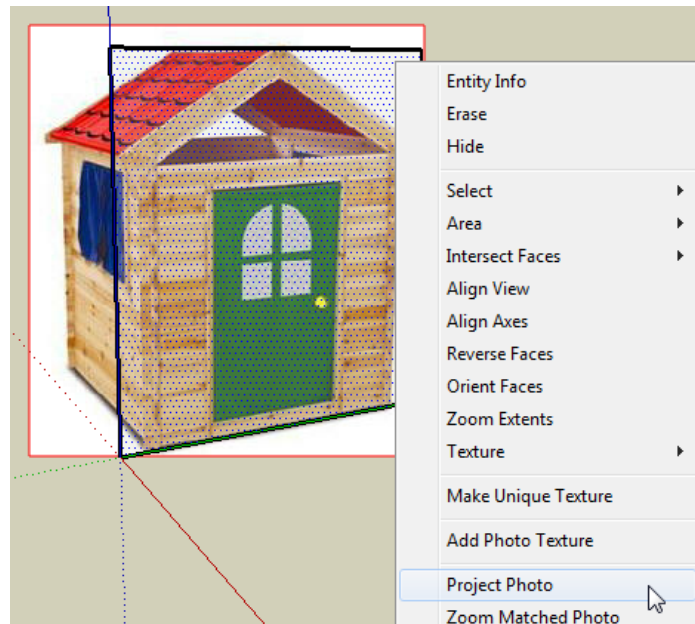
When you're done, the rectangle covers the picture but it's translucent - you can see through it.



- Another thing to notice is that you now have a scene tab at the top of the SketchUp window. If you orbit out of the current view, you'll lose the clubhouse picture, and the rectangle you just made will no longer be translucent. But you can click this tab to get back to the view with the picture and the translucent rectangle.



- Right-click on the translucent rectangle and choose Project Photo.**



- Click Yes if asked to trim faces, though we don't have anything that's only partially visible here so it doesn't matter.

This paints the picture on that rectangle. But you can still see that the Photo Match picture is there, because of the red border around it.



5. Orbit so that you're looking straight at the rectangle. The rest of the picture disappears (no red border), and the painted rectangle is the only thing you see.



6. What we want now is to cut out everything on this rectangle that's not part of the house. So draw lines for the roof, the triangle hole, and the spaces under the sides under the roof. Everything should be symmetric. All the faces that will be cut are shown below covered with dotted blue lines.



7. Erase everything that isn't part of the house.



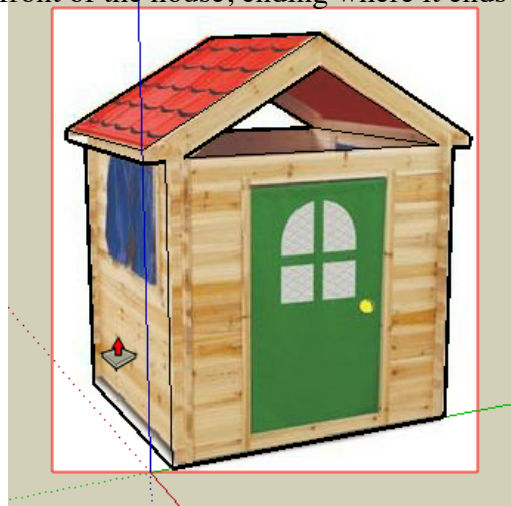
8. We want to Push/Pull this face back to finish the model, but we don't know how far back to go, because we lost the picture. So click the "clubhouse" tab.



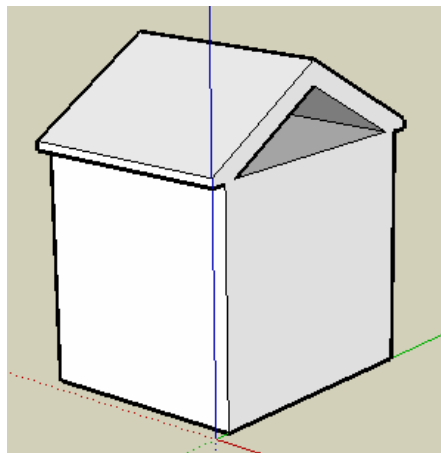
The model orbits around to match the picture, and the picture with the red border is back.



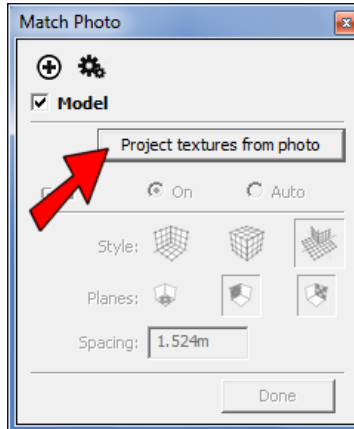
9. Now use Push/Pull on the front of the house, ending where it ends in the picture.



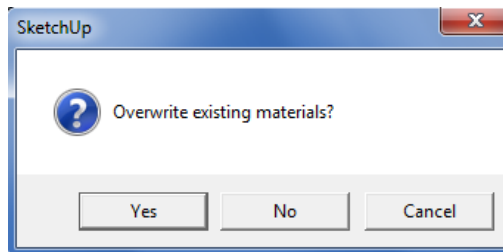
10. Orbit out of the current view, and all of the faces are unpainted, including the front of the house which you had painted before. Don't worry - we'll get this face back.



11. We want to paint a lot of faces now, and there's a way to do it with one click. From the main menu, choose **Window / Match Photo**. Click **Project textures from photo**.



12. Since you had already painted the front face, SketchUp will ask you if you want to overwrite that face. Click **Yes**.



13. And again, click Yes (or No) to the partial faces question.

Now all of the faces you can see are painted to match the picture, though it looks like not much has happened.



14. But orbit around again. The original picture disappears, but we don't need it anymore because we've painted everything we can. But unless you made your model perfectly, the house faces are probably not painted perfectly.



15. If you need to fix the paint on any face, just use texture positioning. You shouldn't have to move pins very far.



16. To paint the faces on the other side, use the eyedropper, or find the thumbnail in the “Colors in Model” collection of the Colors window.



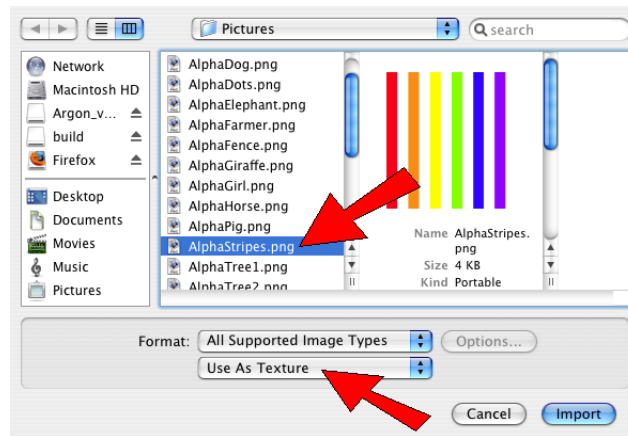
Alpha Pictures

The last section of this chapter has nothing to do with using pictures to make 3D models, but I included it to show how you can use transparent pictures. All of those pictures you downloaded that have “Alpha” in their names have transparent backgrounds.

1. Start by drawing a rectangle around the door.



- Go to File / Import and choose “AlphaStripes.png.” There are several “Alpha” pictures - each one has a transparent background. Make sure Use as texture is checked.



- Click two points on the door to place this picture. Make the picture any size you want.



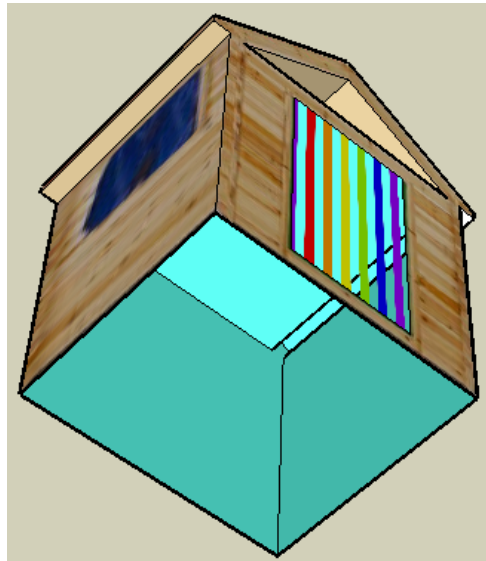
The picture tiles to fill the door, and only the stripes are visible. The parts that were white on the picture are now completely translucent on the door.



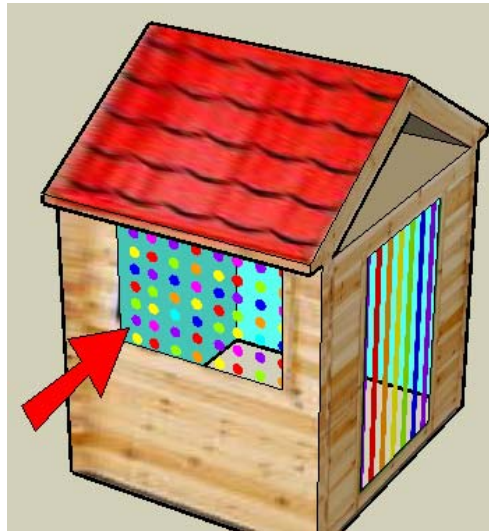
- 4. Look up into the house from below, and erase the bottom face. The inside walls are painted, but they don't match the pictures on the outside walls.



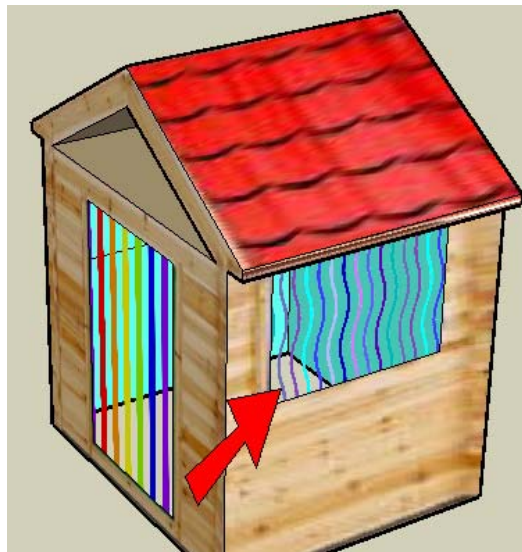
- 5. You could position these textures, but it's easier to paint all the inside walls one color, like light blue.



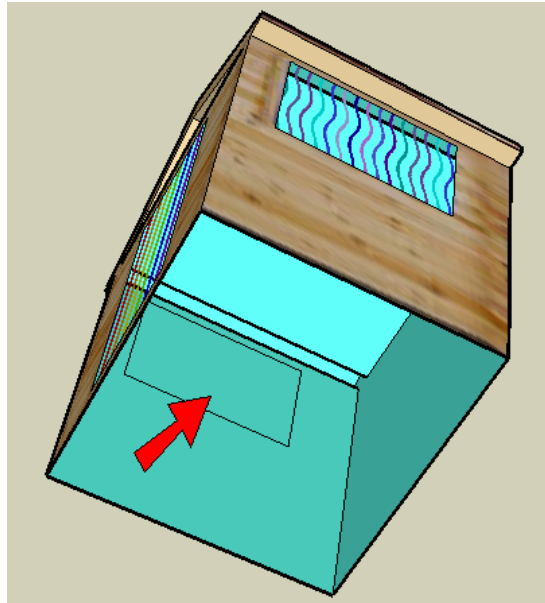
- Next, make a window rectangle and use one of the other “Alpha” pictures to paint it. This one uses “AlphaDots.png,” but there are other ones you can choose from.



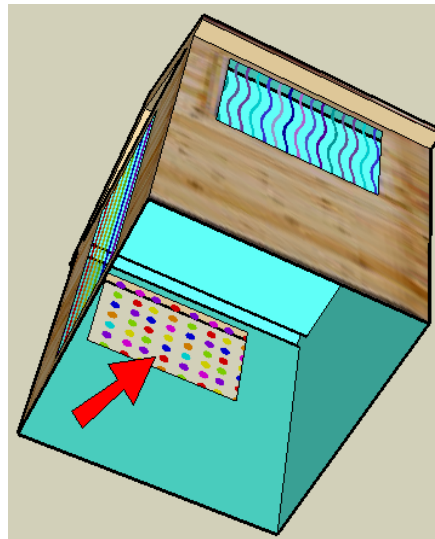
- For the window on the other side, I’m using “AlphaWaves.”



8. Look up again into the inside of the house. You painted the outsides of the windows and door, but the inside faces don't match the outsides.



9. So find the “Alpha” picture you used for the outside, and paint the inside to match.



10. Now when you look at the house like this, should be able to see straight through to the outside.



11. Save your model. If you named the other clubhouse model “Clubhouse1,” you can name this one
“Clubhouse2.”

RAISE YOUR HAND AND HAVE ME CHECK IT. PLEASE SUBMIT TO ME AS CLUBHOUSE 2 THROUGH GOOGLE CLASSROOM.

Chapter Review

Here’s what we’ve learned in Chapter 3:

- **If you want to import a picture as a separate object (not painted on a face), use the Use as Image** option. When you Explode this image, the material will appear in “Colors in Model.”
- If you Push/Pull a face, and then double-click another face, that second face will be pushed or pulled the same distance as the first face.
- To start Photo Match, use the Use as New Matched Photo option when you import a picture.
- To use Photo Match, follow these steps: set the red and green axes, set the yellow square for the origin,

then right-click and choose Done. The SketchUp axes will then match the picture, and you can draw right on top of the picture.

- If you are using Photo Match and you orbit away and lose the picture, just click the tab at the top that has the name of the picture on it.
- If you paint with an “Alpha” image that has a transparent background, the background parts of the picture will be transparent in SketchUp.