



CAD SKILLS

CAD Tutorial 22: Shipping Container House



Level of Difficulty



Time

Approximately 50–60 minutes

Starter Activity

Have a go at producing a mood board to help inspire your shipping container concept home design



Lesson Objectives...

- To understand the basic tools used in SketchUp.
- To understand the advantages of using CAD
- To be able to successfully use CAD independently to complete a range of tutorials in 2D and 3D
- To develop advanced skills and problem solving skills when using SketchUp

Lesson Outcomes...

By the end of this tutorial you will be able to...

- Use the push pull and move tool
- Learn about centre lines
- Create, Move and Rotate components
- Use the offset tool to make objects and add detail
- Shape and form your design
- Colour and render your design

Skills to be used in this project...

Basic Skills	New and Higher Skills
Zoom tool	Rotate tool
Orbit tool	Move tool
Pan tool	Offset tool
Line tool	Arc tool
Rectangle tool	Follow Me tool
Circle tool	Paint Bucket tool
Eraser tool	3D Text tool
Push/Pull tool	Making Components

Basic skills are those required to do very basic drawings and are detailed as part of this presentation.

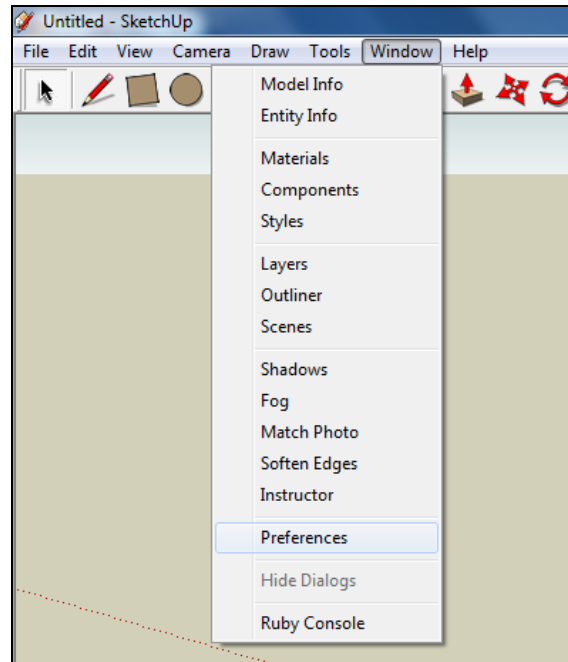
New and higher skills may be new to the novice and are the focus for learning in this presentation.

Learning Styles

Visual : *Presentation*

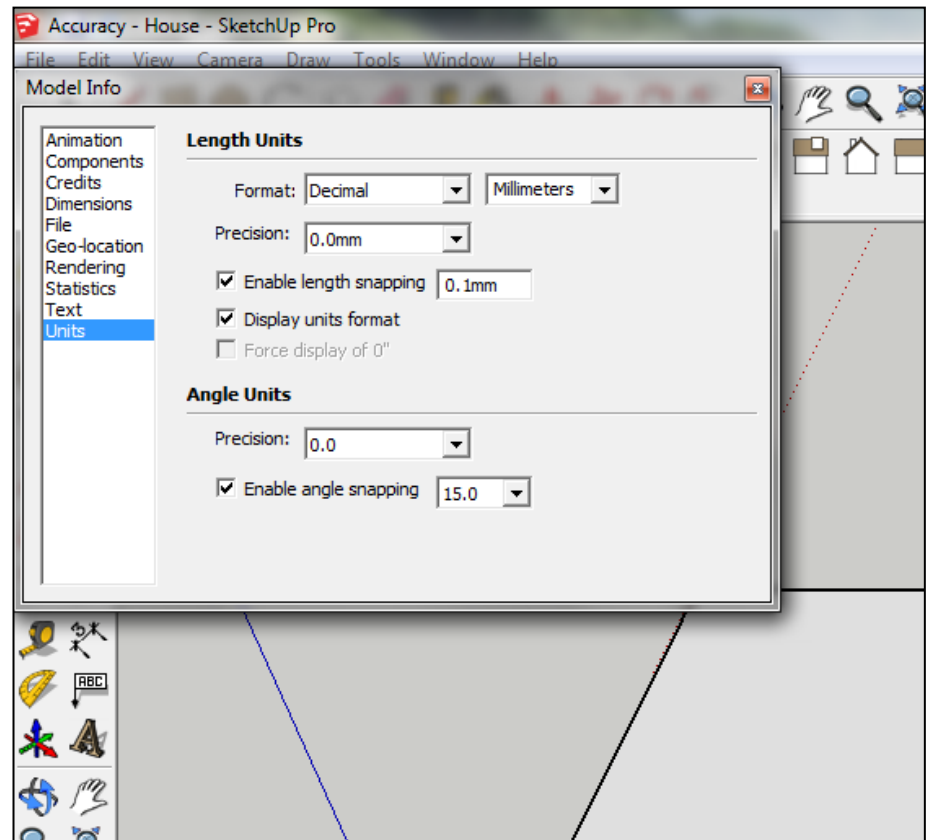
Auditory: *Video*

Kinaesthetic: *Demonstration*



1. Open Library /Technology/ Mr Kenny/ Sustainable House/ CAD Skills// Lesson 1 House

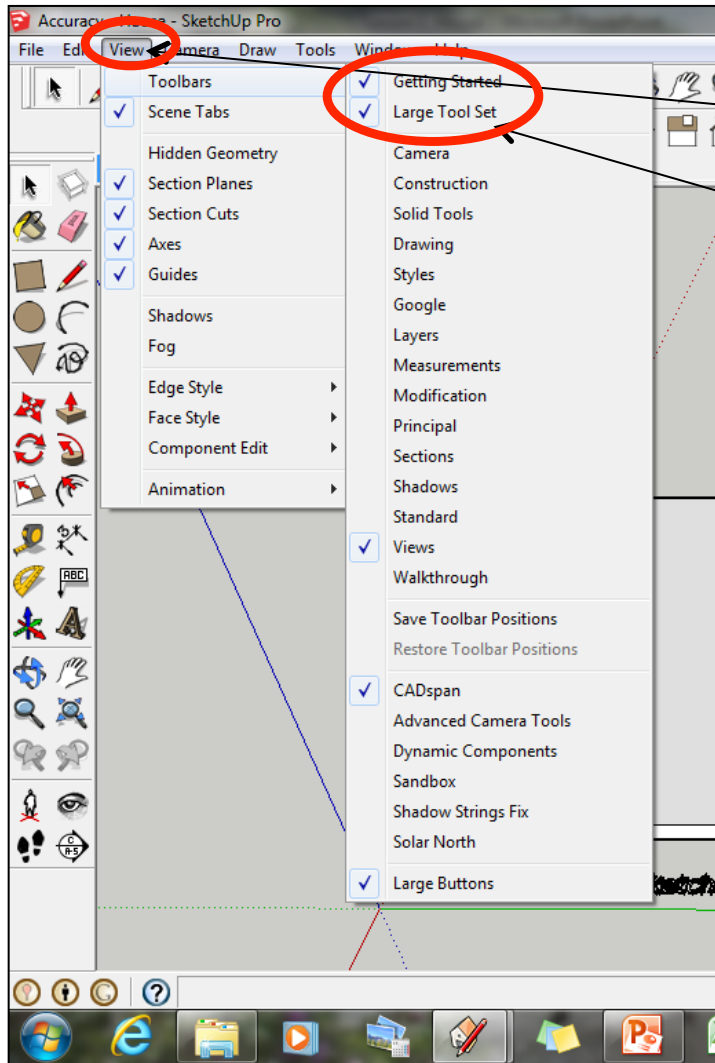
Open the sketch up drawing. Once you have opened SketchUp, go to **Window** and select **Model Info**



2. Select **Units** and choose **Decimal Millimetres**. We are using this template because we are doing a product design.

Note: It is often necessary to start a new file to use the new template. Go to **File** then **New**.

3. Now select the **View** then **toolbars** and ensure **Getting Started** and **Large Tool Set** are ticked

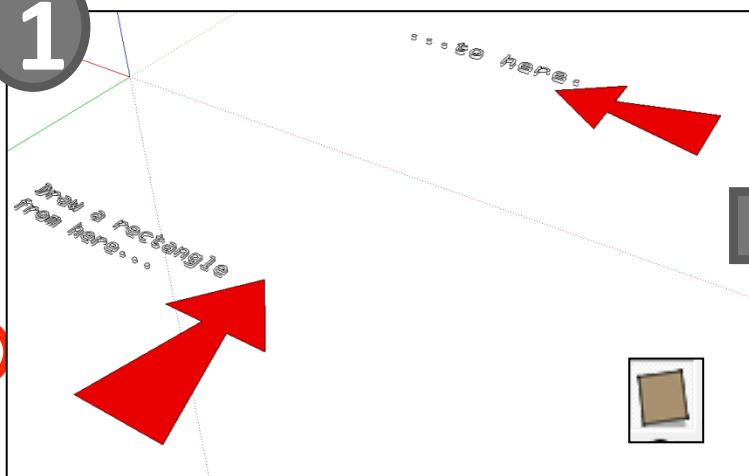


3a Select **View**

3b Tick Getting Started
3c Tick Large Tool Set

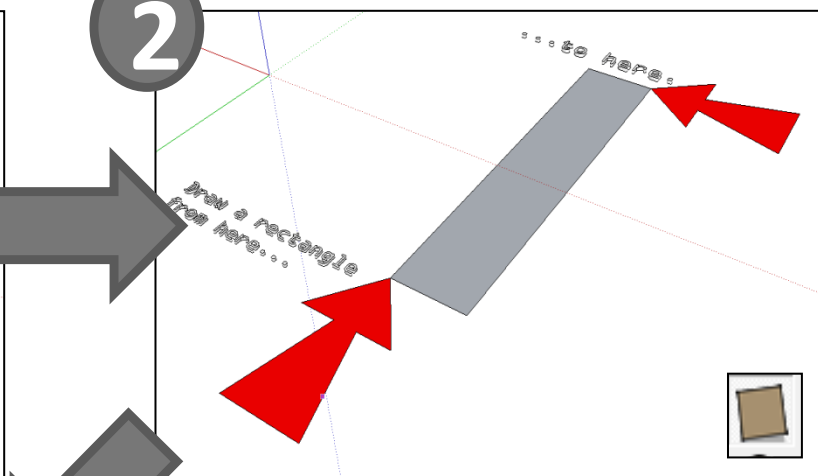
Note: this will place a tool bar across the top (**getting started**) and the side (**Large Tool Set**)

1



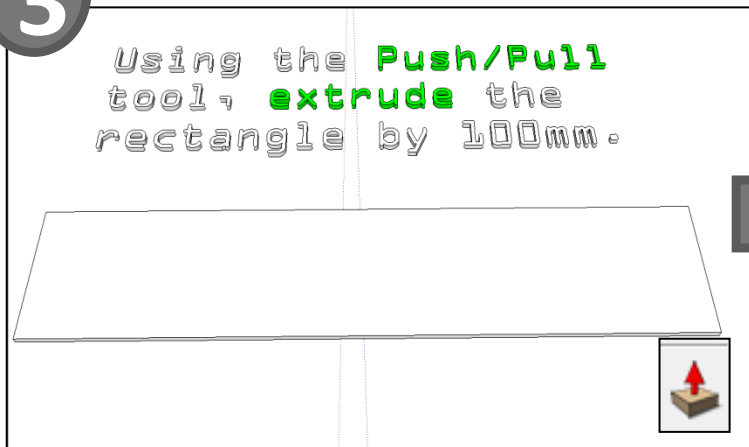
1. Select the **square** from the **toolbar**

2



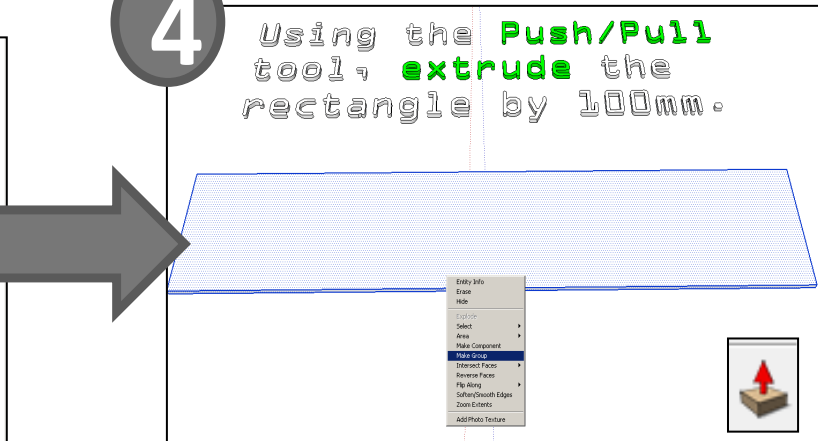
2. Starting on the end of the draw the rectangle from one arrow to the other

3



3. Select the **push/pull tool** from the **toolbar**

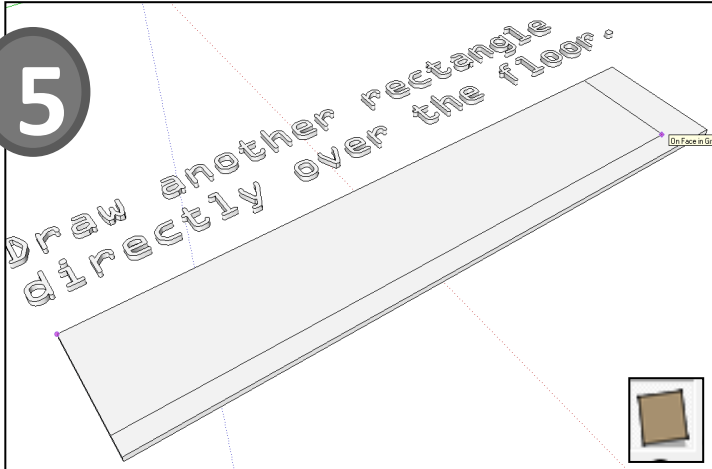
4



4. Pull the rectangle up and **type 100** and press **enter**. **Click three times and group the object**

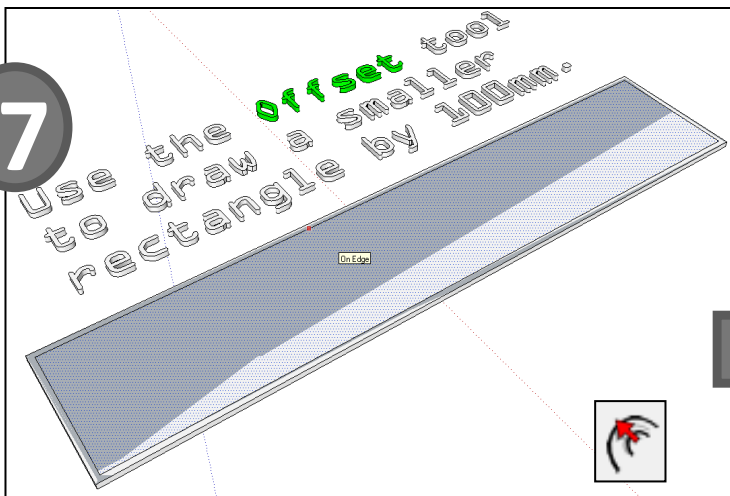


5



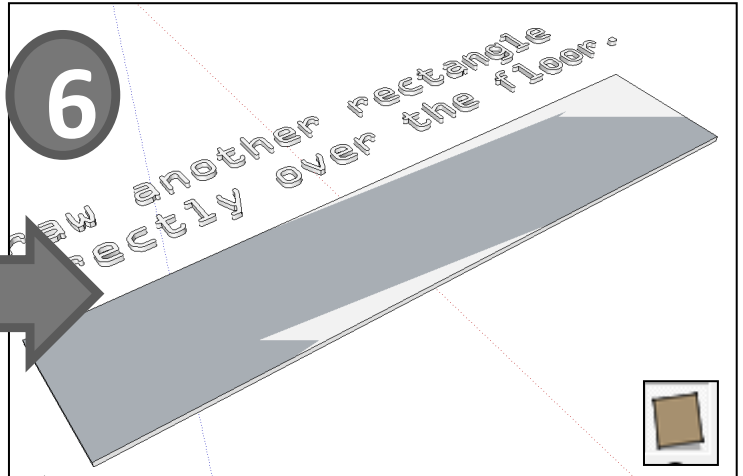
5. Select the **square** from the **toolbar**

7



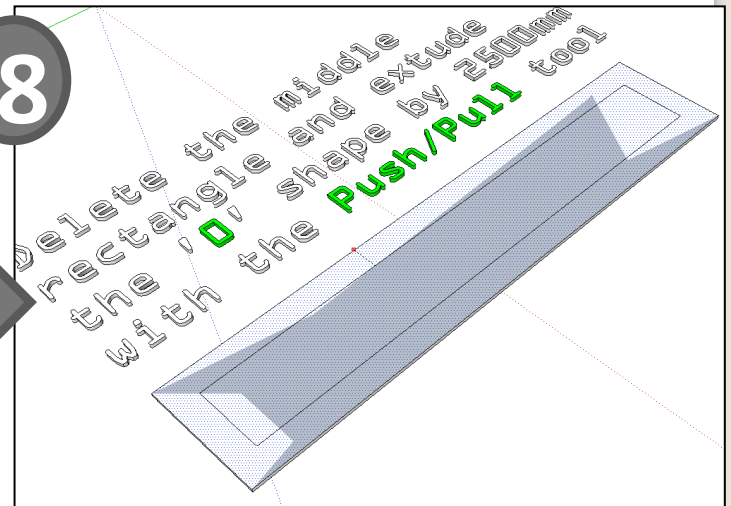
7. Use the offset tool and click on the edge of the rectangle you have just drawn. It will draw another rectangle

6



6. Draw a rectangle directly over the first. The graphics will look 'glitchy' if you have done it correct.

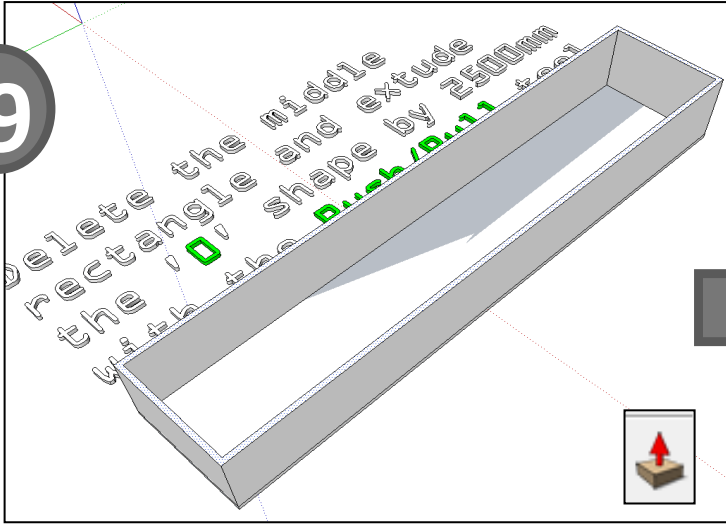
8



8. Pull the rectangle into the middle and **type 100** and press **enter**. Click on the **middle** of the rectangle and **press delete**

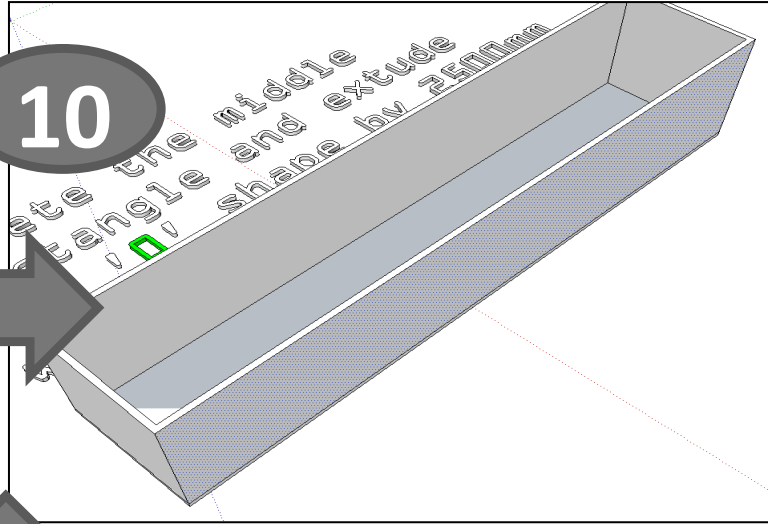


9



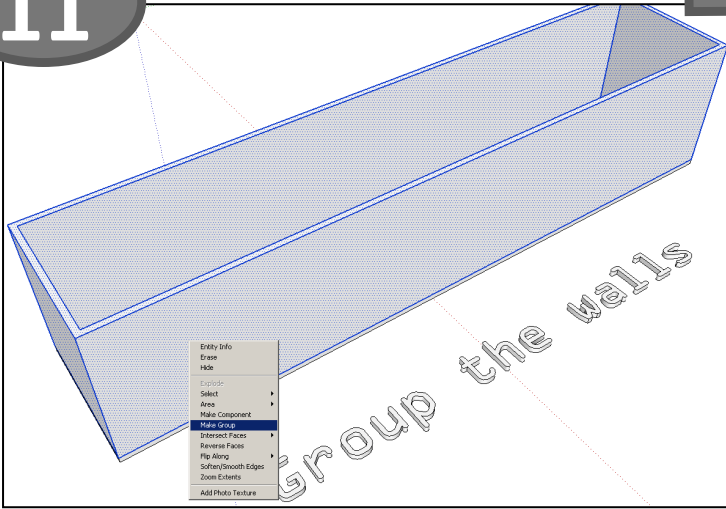
9. Select the **push pull** from the **toolbar**

10



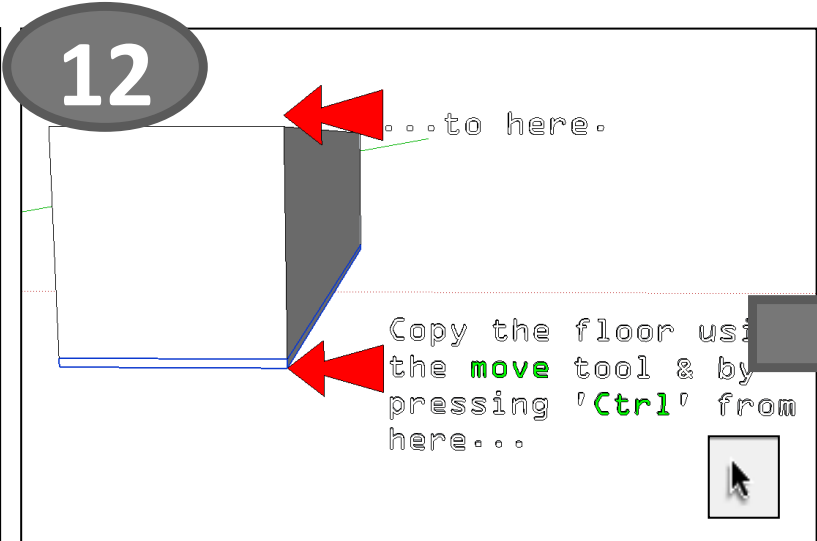
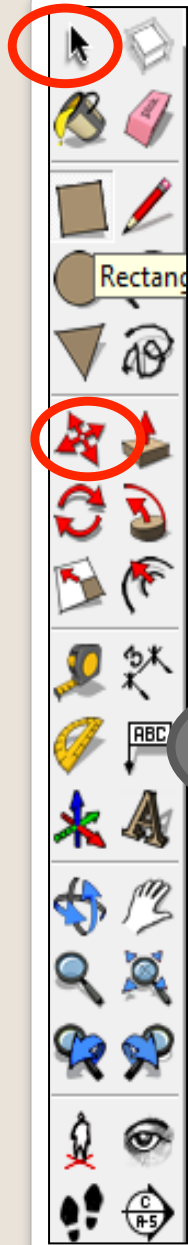
10. Click on the edge and pull up the walls and **type 2500** and press **enter**

11

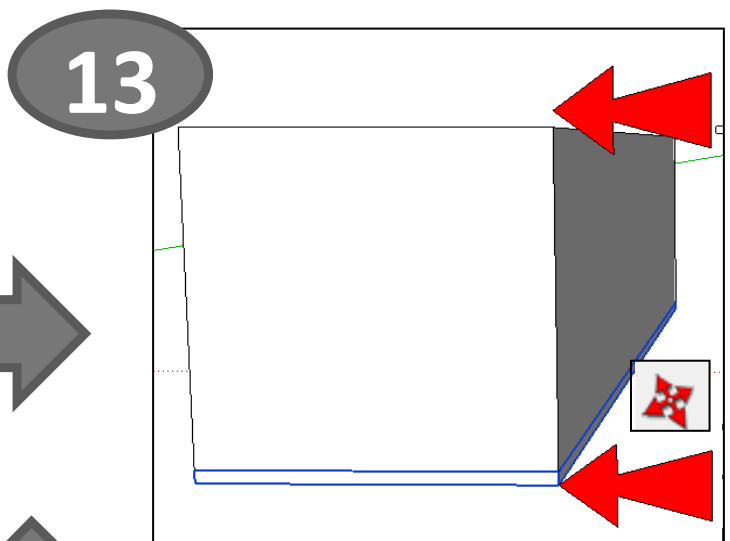


11. Click on the walls three times and right click and press group.

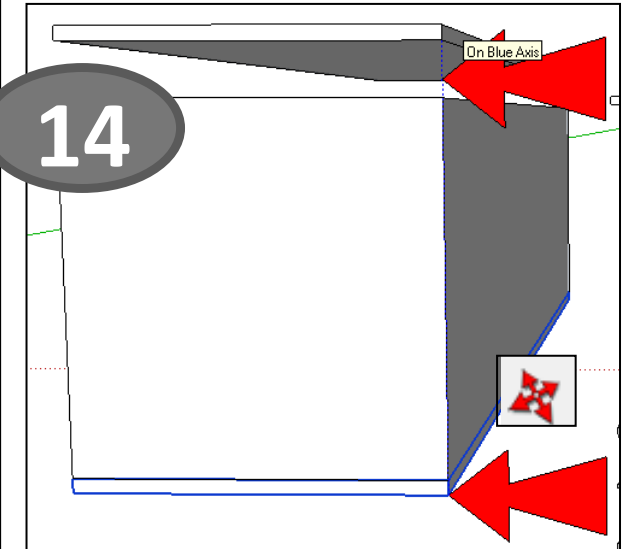
The floor should be one group and the walls a second group.



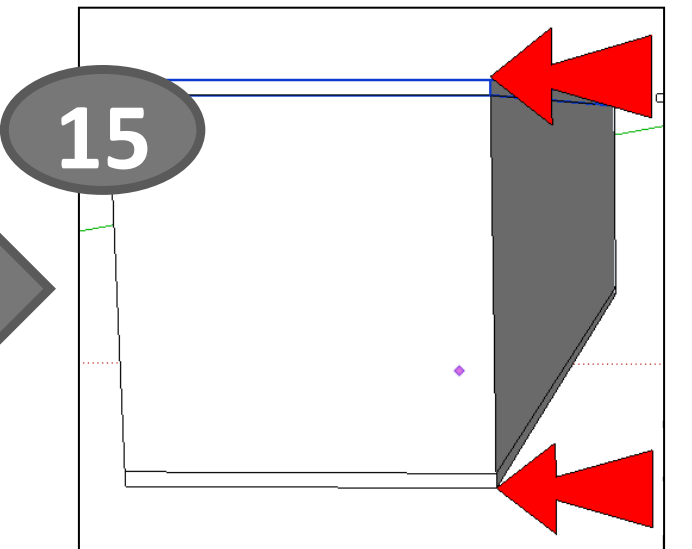
12. Select the **floor** using the **select** tool



13. Use the move tool to click on the bottom edge the arrow point touches



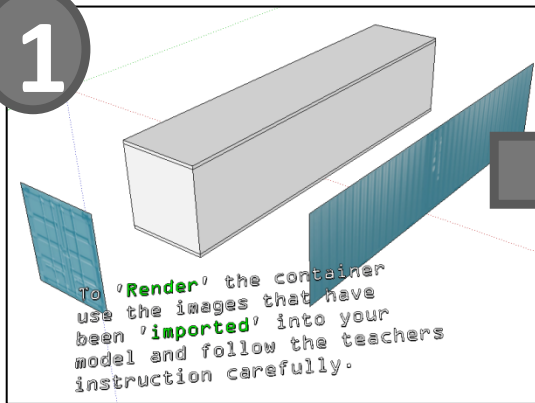
6. Press Ctrl button on the keypad which is copy.



7. Pull the new shape up and place on the top of the shipping container corner. This is the roof

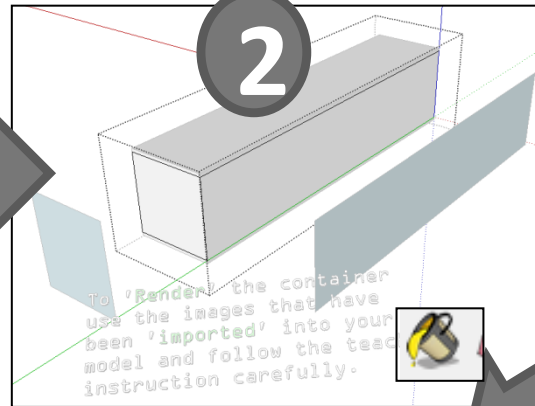
Rendering the Container

1



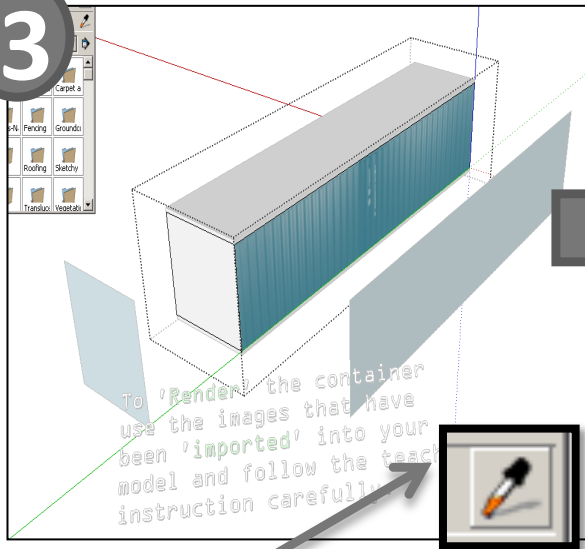
1. Double click on the shipping container walls

2



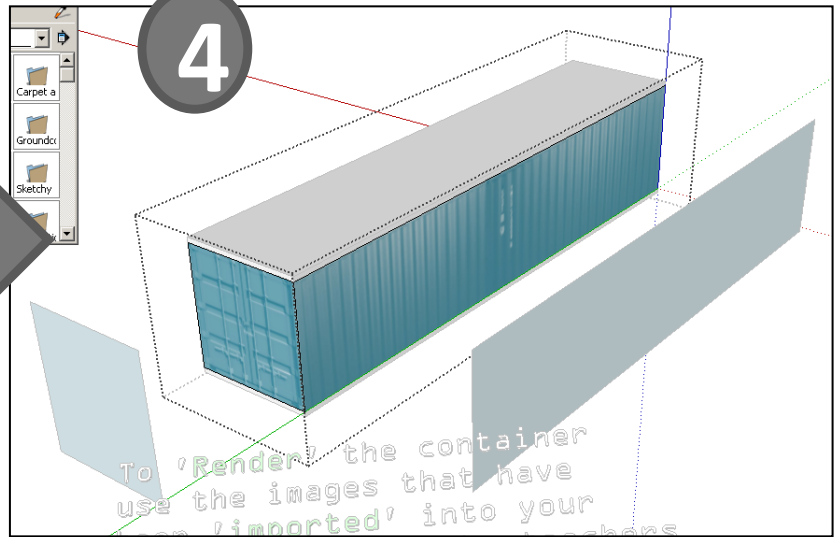
2. Click on the colour bucket

3

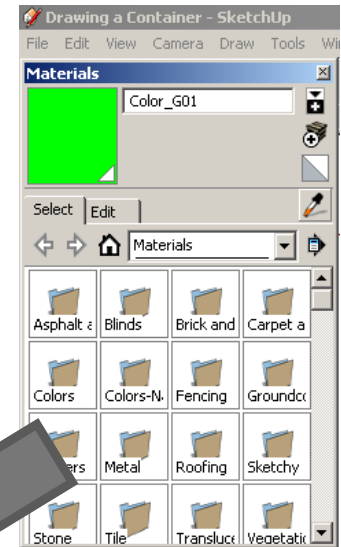


3. Click on this image then on the blue shipping container side image. This will be greyed out

4

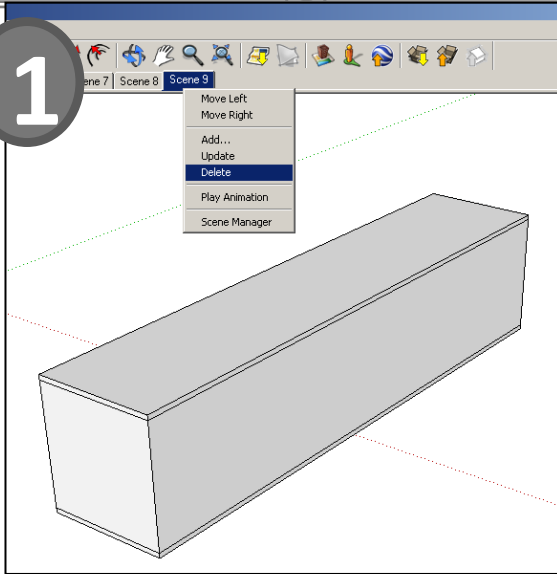


4. Then click on your shipping container wall to transfer the image. Do the same for the front.



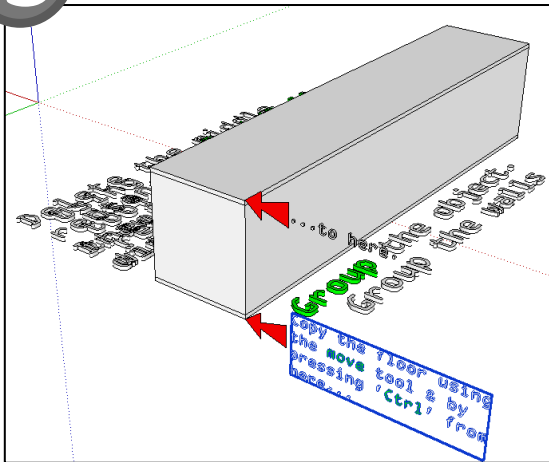
Deleting Scenes

1



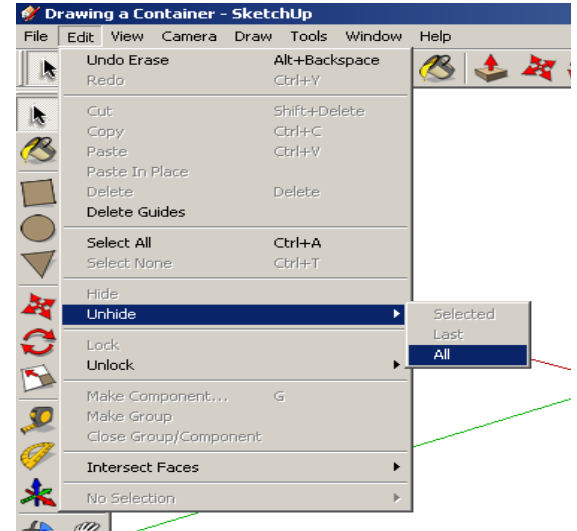
1. Click on each of the **scenes** & then right click and delete

3



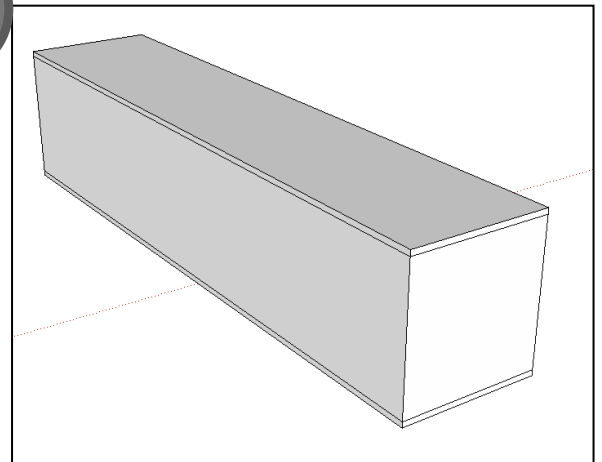
3. Delete all the guidance notes

2



2. Once all the scenes are deleted click on **Edit** and then **Unhide** and all

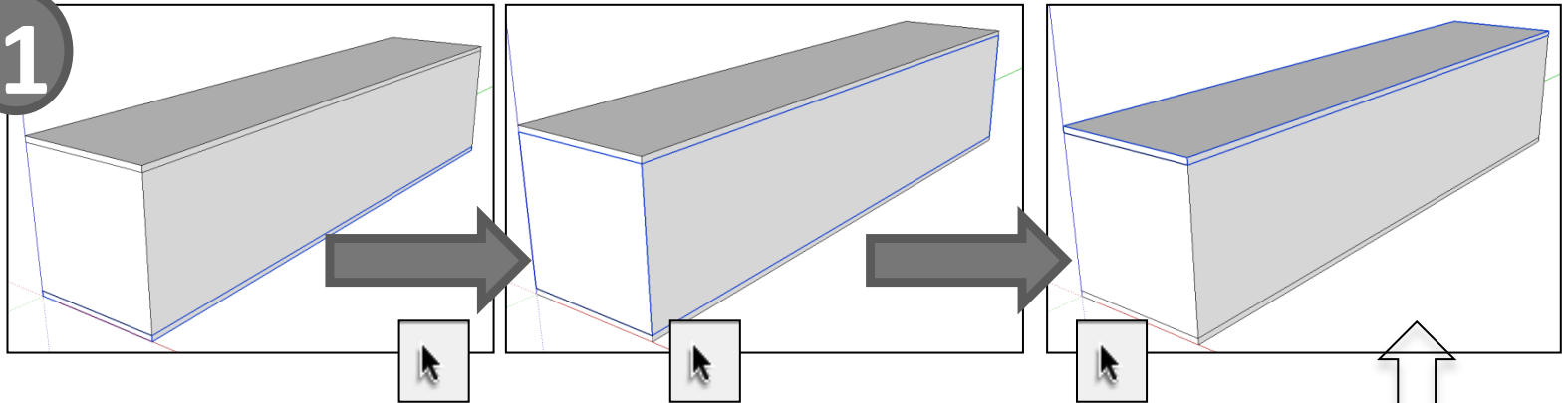
4



4. You should be left with a blank shipping container.

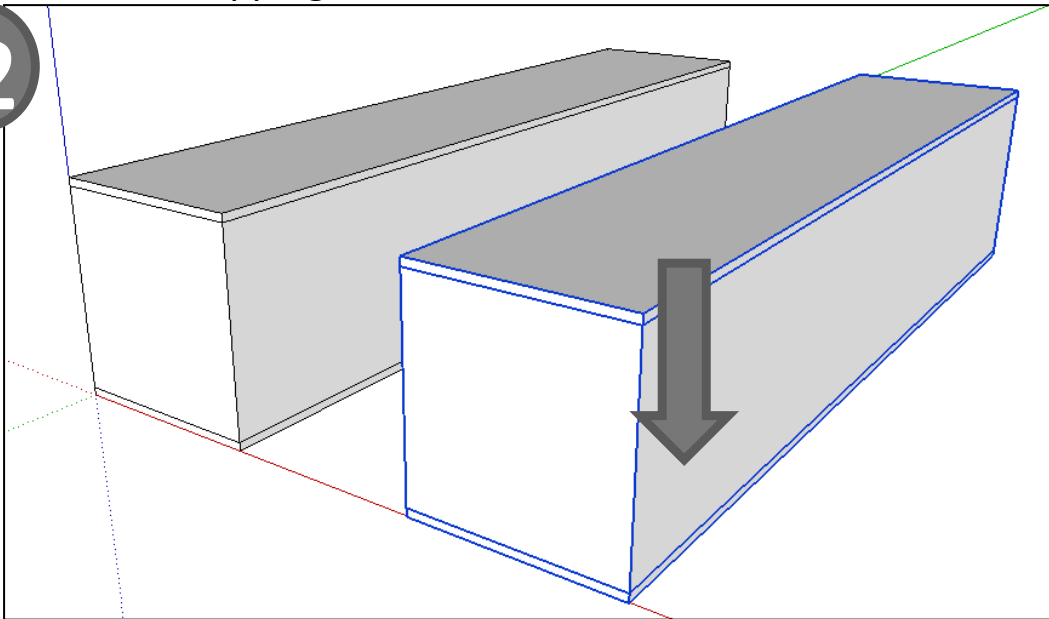
Copying the Container

1



1. Using the **select** tool from the **toolbar** click on the floor, then hold the shift down and at the same time click on the walls and the roof to select all three groups that make the shipping container

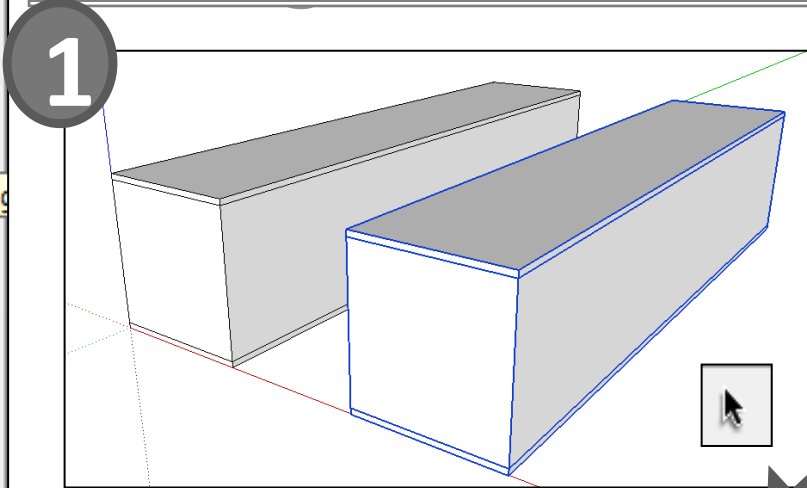
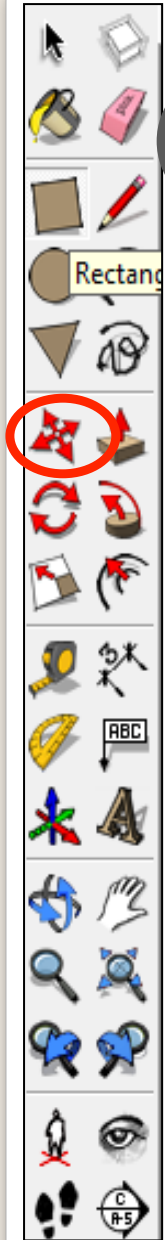
2



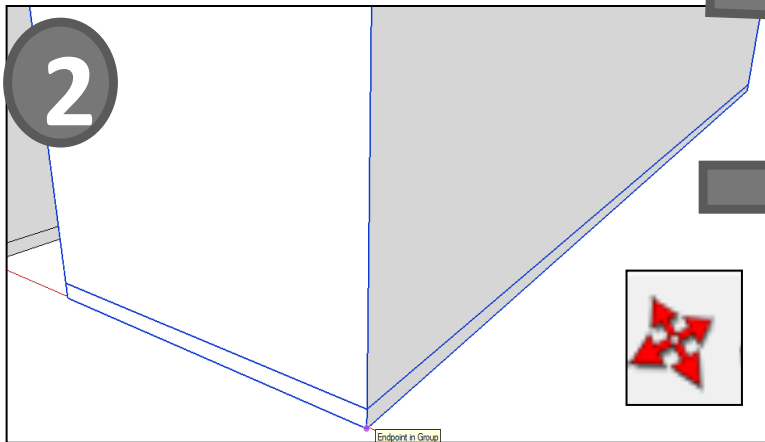
2. Click on edit copy (**Ctrl C**) and then edit paste (**Ctrl V**) to copy and paste a second container onto the page.



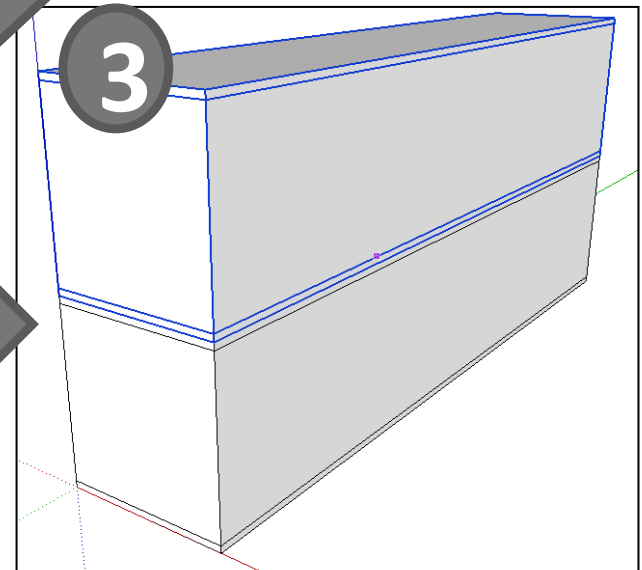
Moving the Container



1. Using the **select** tool from the **toolbar** click on the floor, then hold the shift down ↑ and at the same time click on the walls and the roof to select all three groups that make the shipping container.

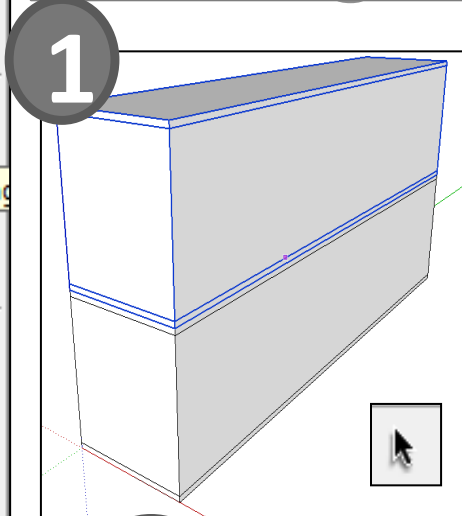


2. One all the parts of the container are highlighted select the **move tool** from the **toolbar** and the click on the **corner of the container** to move it

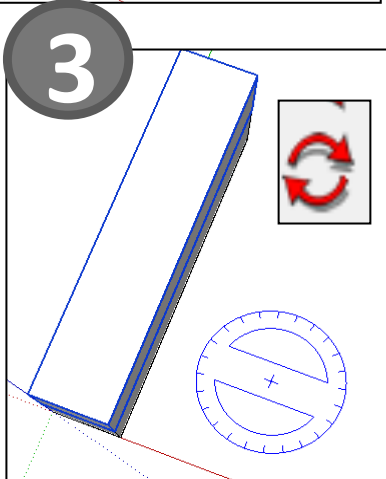


3. As you have completed in earlier tutorials move the object from corner to corner.

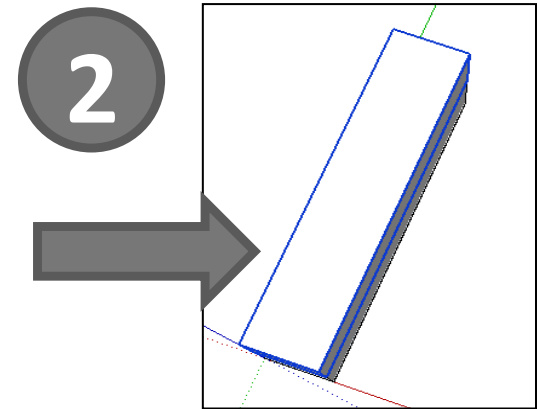
Rotating the Container



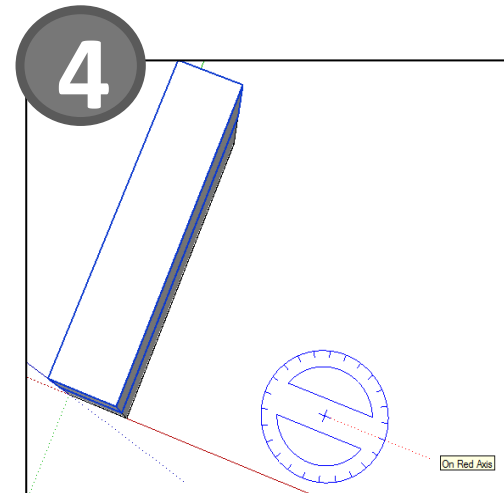
1. Using the **select** tool from the **toolbar** click on the **floor**, then hold the shift down and at the same time click on the walls and the roof to select all three groups that make the shipping container.



3. Click on **rotate tool bar**. Click it once to set it in place. The rotate protractor must be **BLUE** when you click it into place, it does **not have to touch the container**

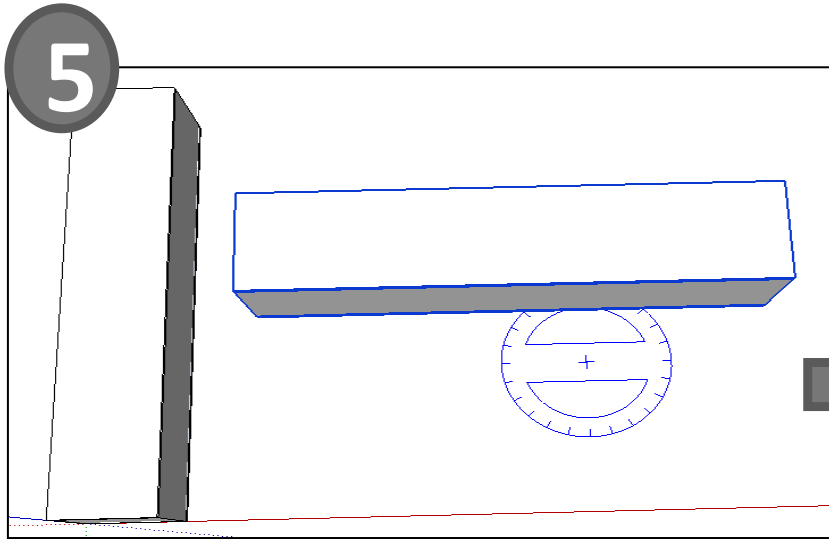


2. Orbit so you are above the container

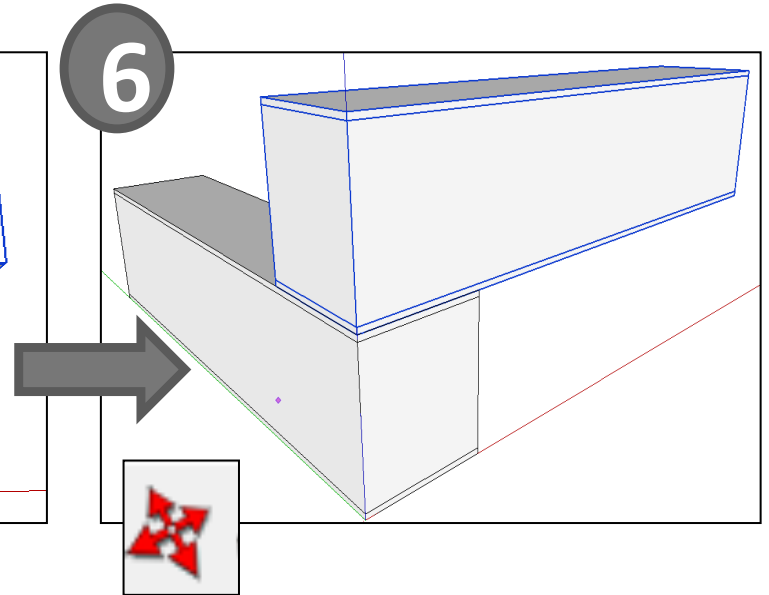


4. Pull the line out so it goes **green** or **red**. Click it again to start rotating.

Rotating the Container



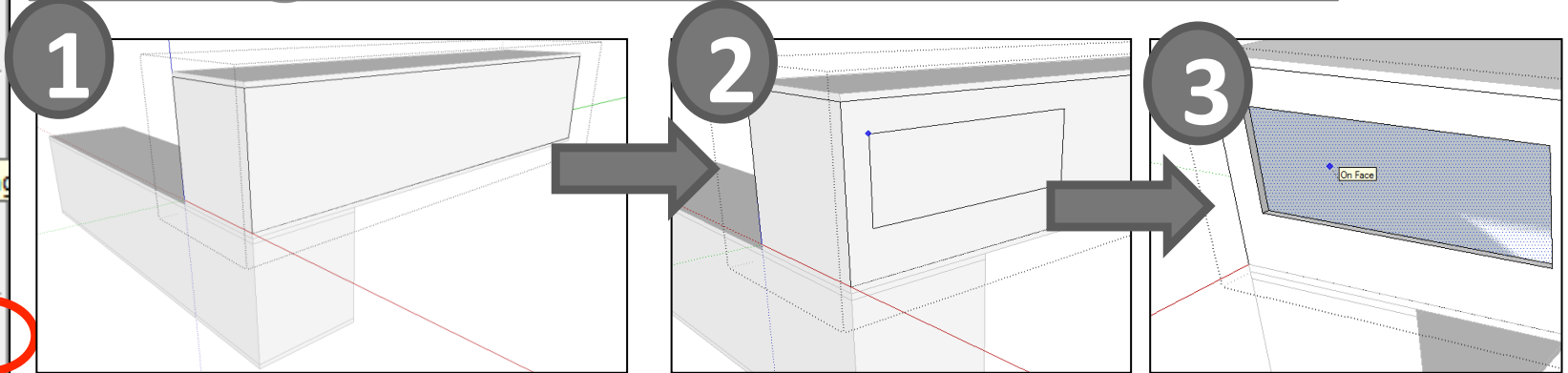
5. Rotate the container through 90 degrees watch the bottom right hand corner until it says 90 and click to set in place or alternatively type in **90** and press **enter**.



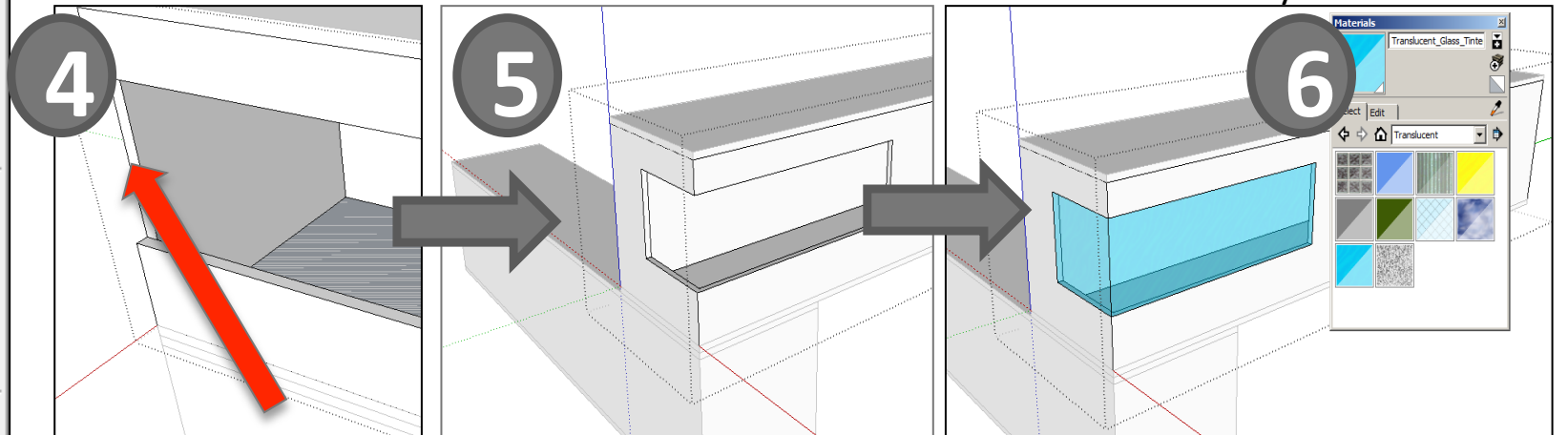
6. As you have completed in earlier tutorials move the object from corner to corner.



Adding Windows to the Container



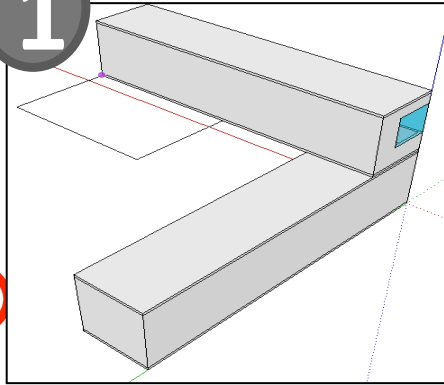
1. Select the **shipping container** which you want to draw the window on and **double click**. Everything else should fade out
2. Select the **square** from the **toolbar** and draw the window
3. Use the **push pull** from the **toolbar** and push the window back until it says **on face**



4. Use the **push pull** from the **toolbar** and push the window edge back
5. Use the **push pull** from the **toolbar** and push the window edge back around the side
6. Select the **square** from the **toolbar** and draw a square over the window you have drawn and render in translucent

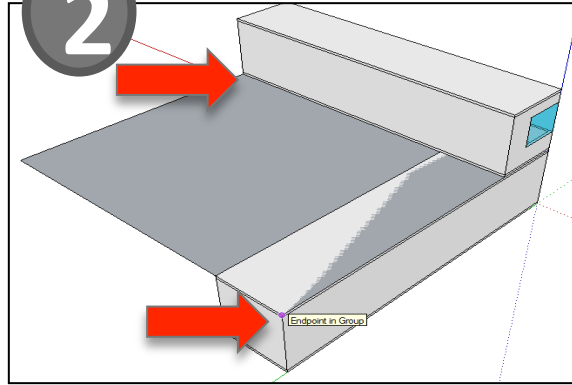
Adding Features to the Container

1



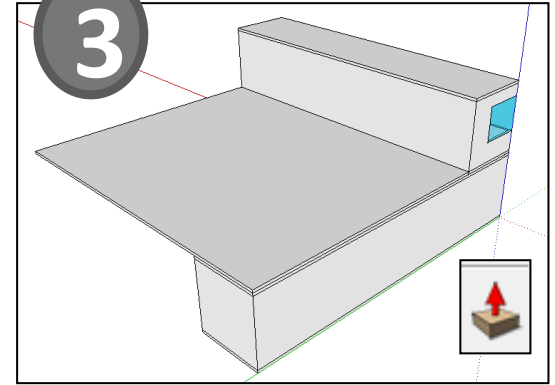
1. Select the **square** from the **toolbar**

2



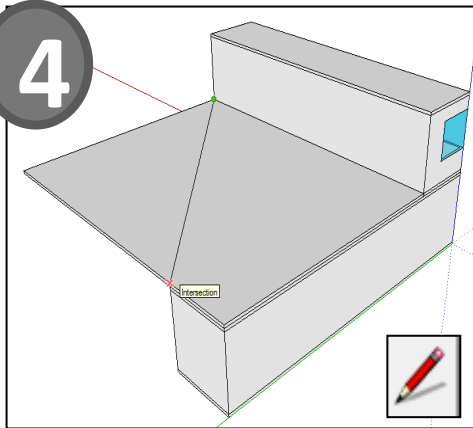
2. Draw from one corner to the other

3



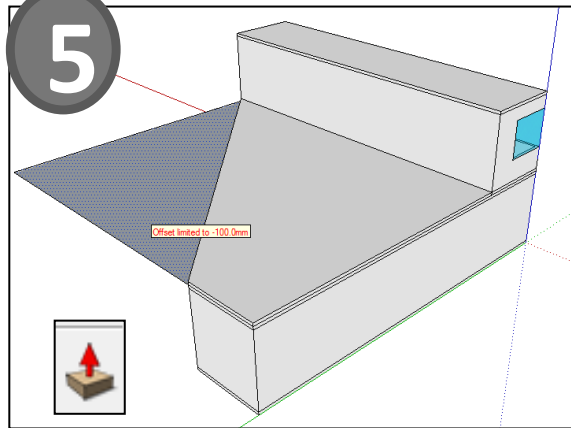
3. Use the push pull and pull up typing 100 and then enter

4



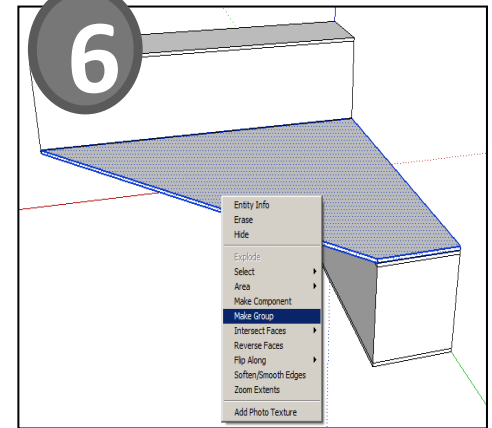
4. Select the **pencil tool** from the **toolbar** and draw a line as shown

5



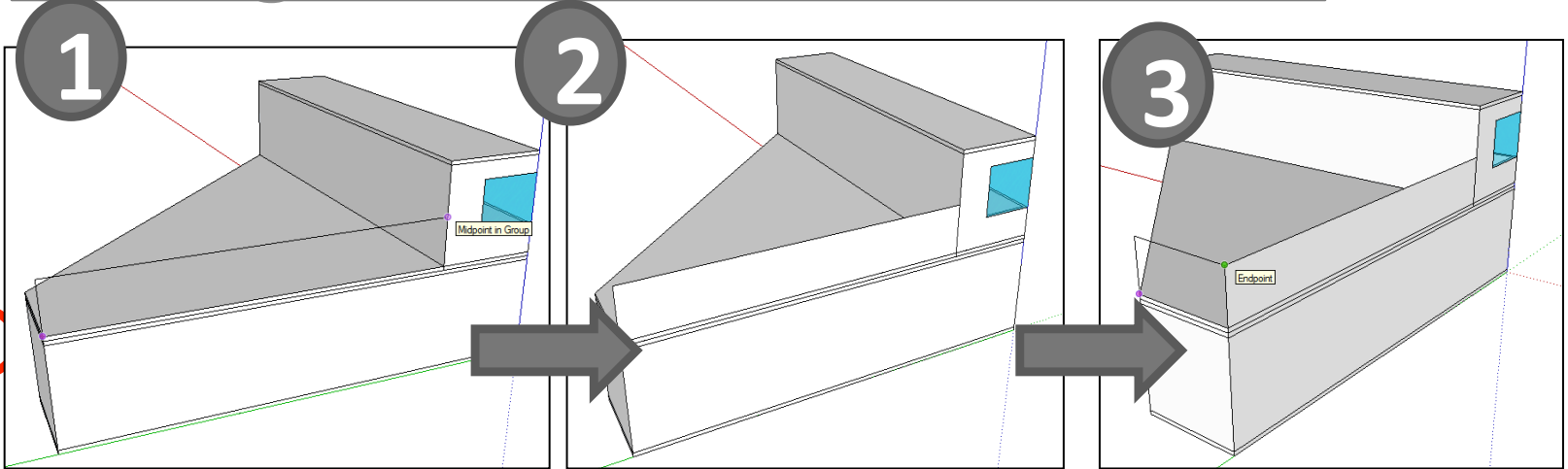
5. Use the push pull and push down typing 100 and then enter to get rid of that part

6

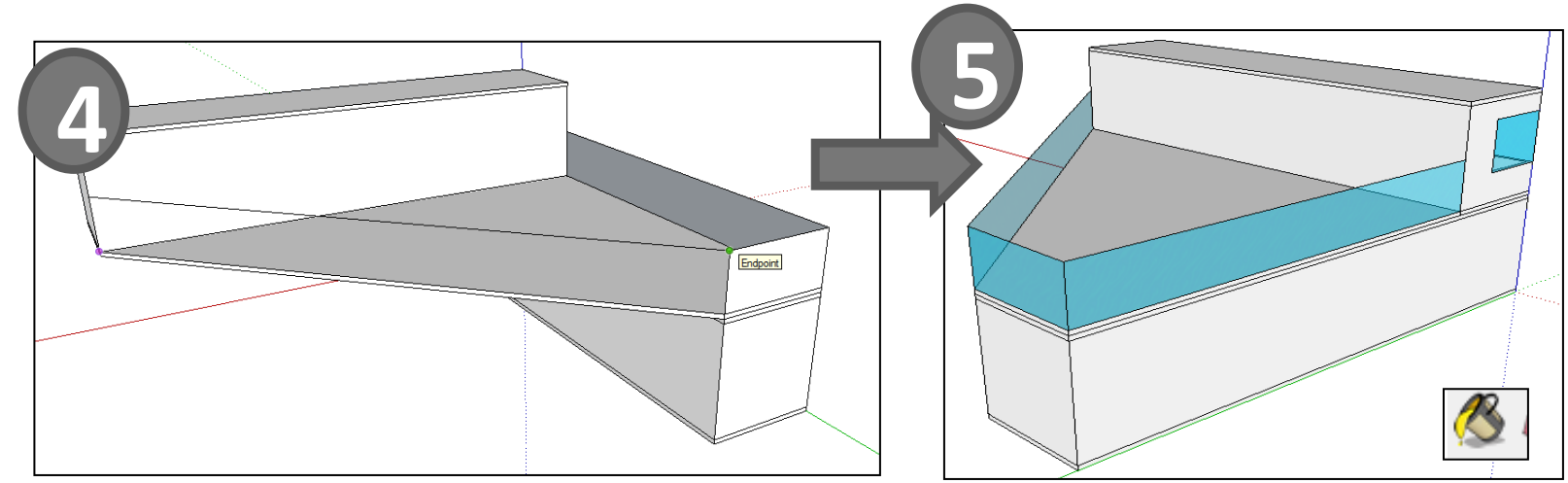


6. Click three times to highlight the whole balcony and then right click and group

Adding Features to the Container

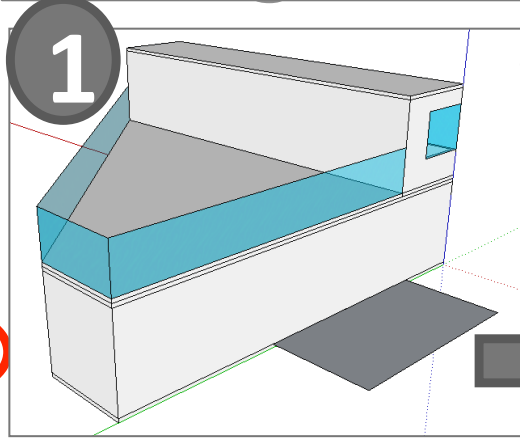


1. Select the **square** from the **toolbar** and draw a safety balcony around the top as shown

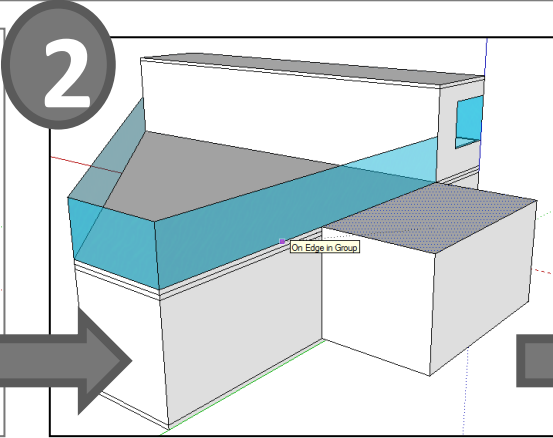


2. Use the colour bucket and select transparent to colour the balcony in

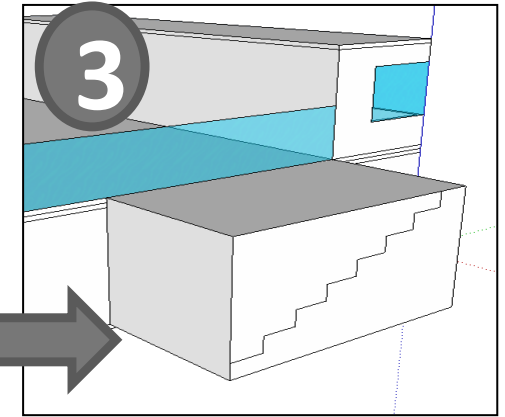
Adding Features to the Container



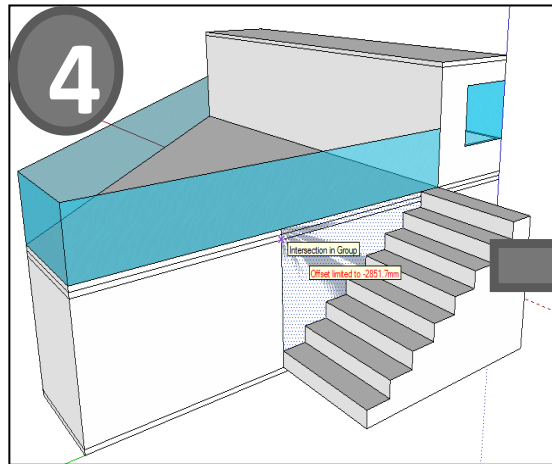
1. Select the **square** from the **toolbar** and draw a square as shown



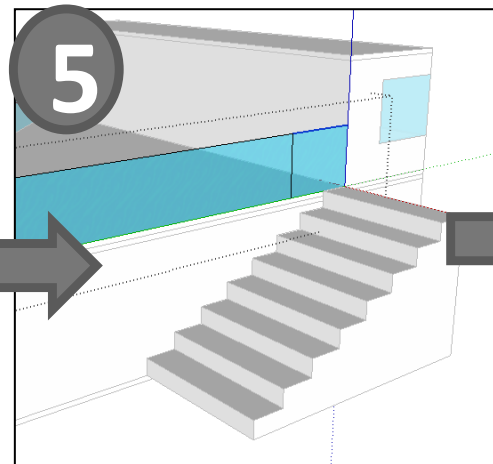
2. Use the push pull tool to pull up the square



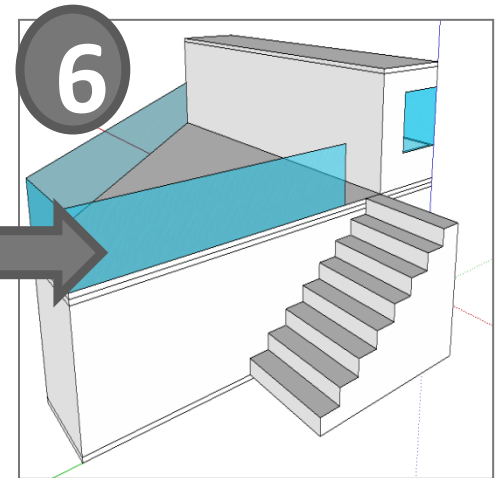
3. Use the pencil tool to draw stairs on the side



4. Use the push pull to get rid of the waste



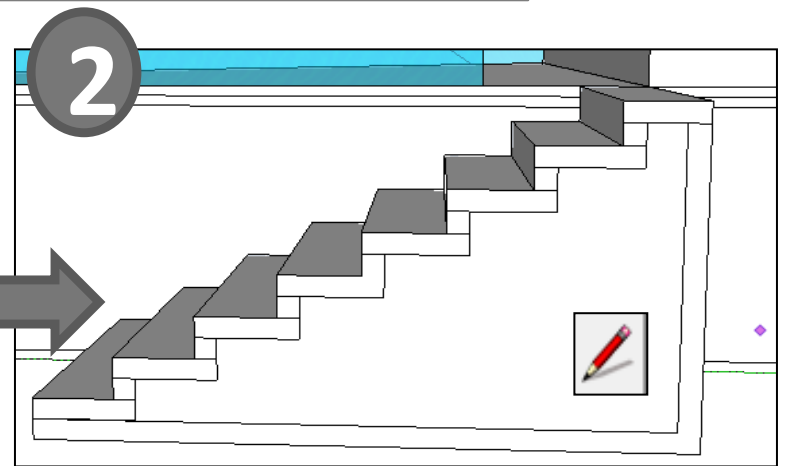
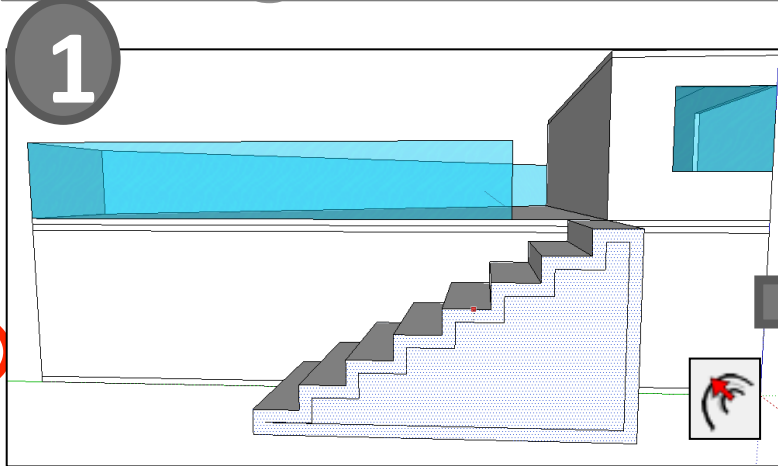
5. Draw a line down on the balcony as shown above



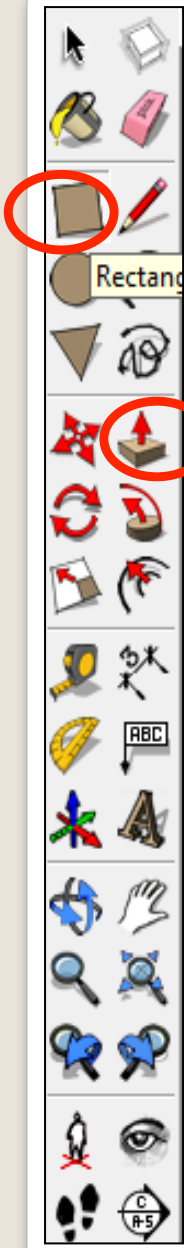
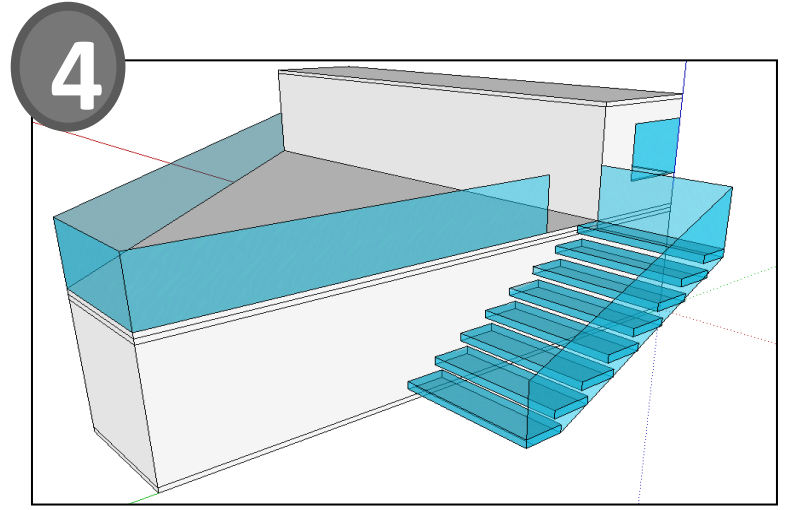
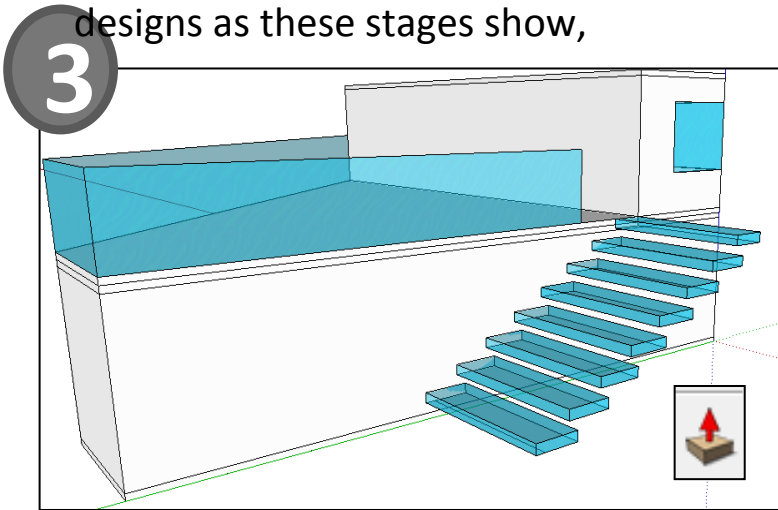
6. Use the rubber to rub the top line out.



Adding Features to the Container



1. Using the contour tool, the pencil, push pull and rubber tool you can get really interesting designs as these stages show,



Extensions:

- Have a go at redrawing your own sustainable house. **Don't FORGET** to **INCLUDE** the **sustainable features** you have been researching that are suitable for your consumer.

