



Design out the box

Time 40-50 mins approx

Level of difficulty ★★☆☆☆

- CAD stands for Computer Aided Design.
- It is the use of computer technology to aid in the design of something.
- CAD can create 2D and 3D virtual models of goods and products.



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...

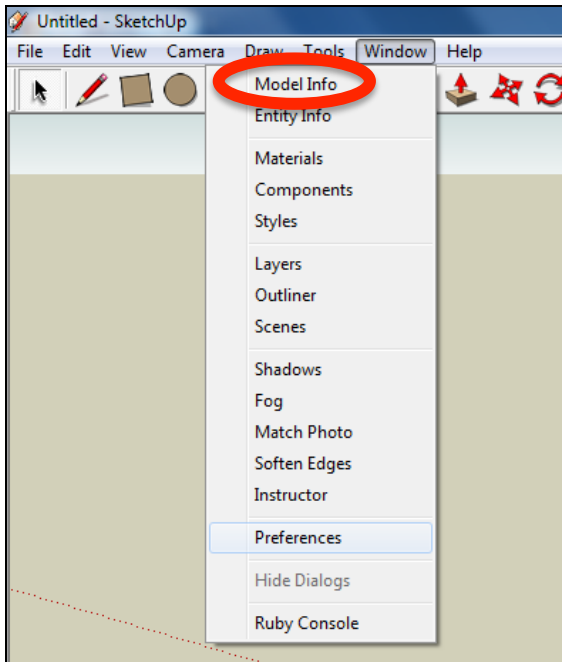
- Use the push pull and move tool
- Learn about centre lines
- Create, Move and Rotate components
- Use the offset tool to make objects and add detail
- Shape and form your design
- Colour and render your design

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.

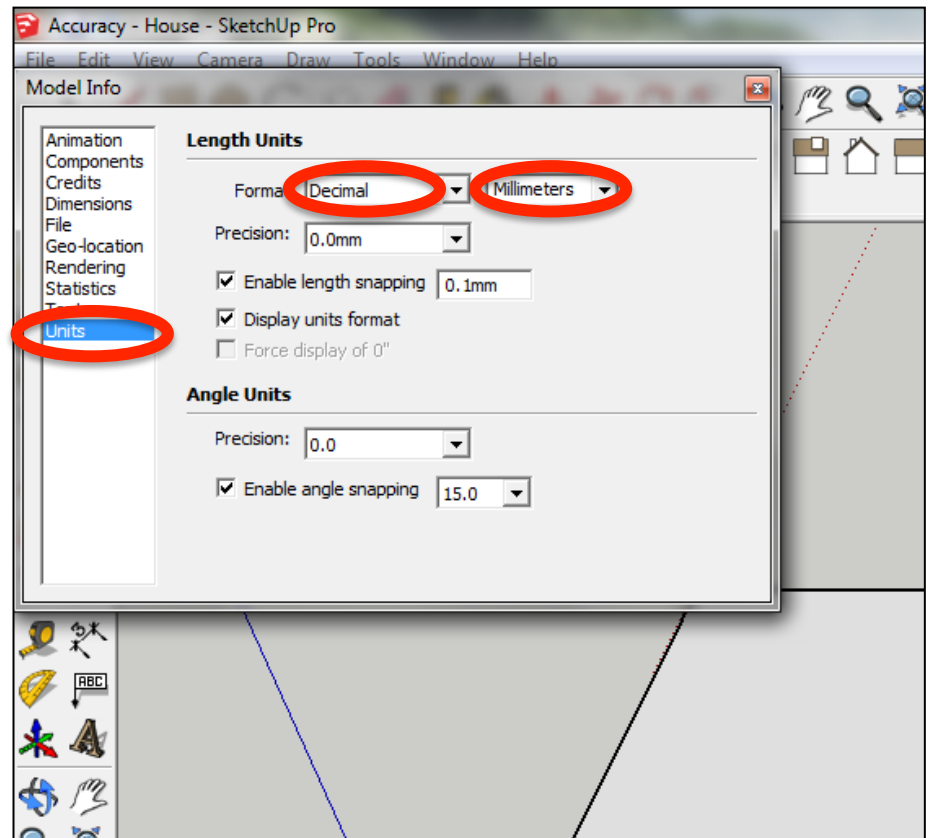
New and higher skills may be new to the novice and are the focus for learning in this presentation.



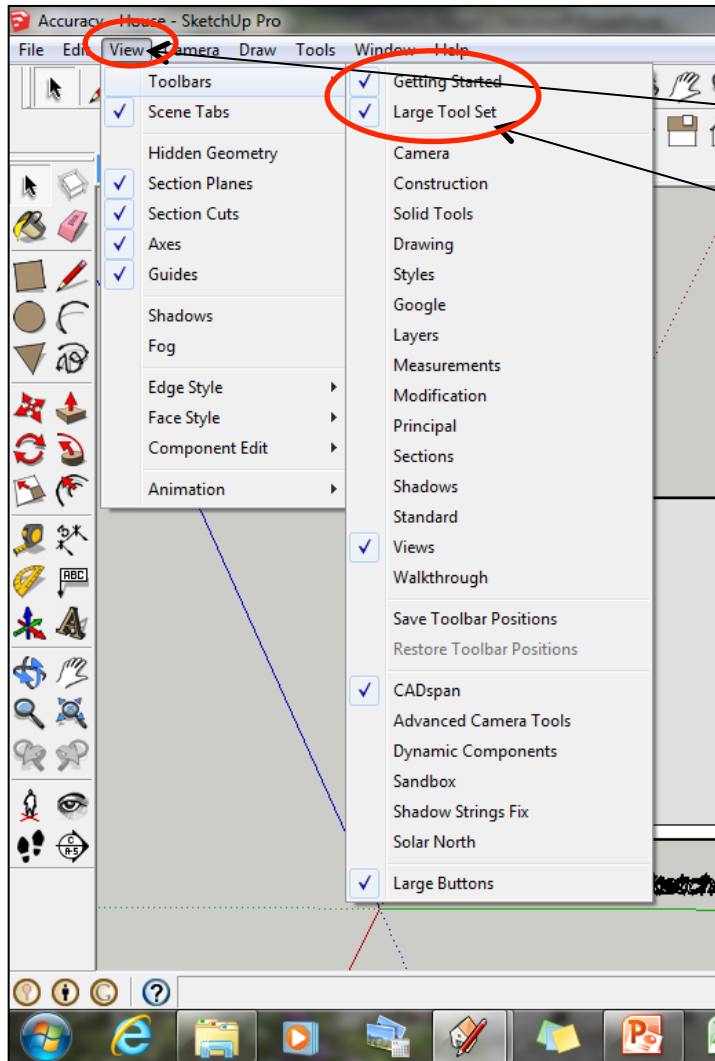
1. Open the sketch up drawing. Once you have opened SketchUp, go to **Window** and select **Model Info**

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**

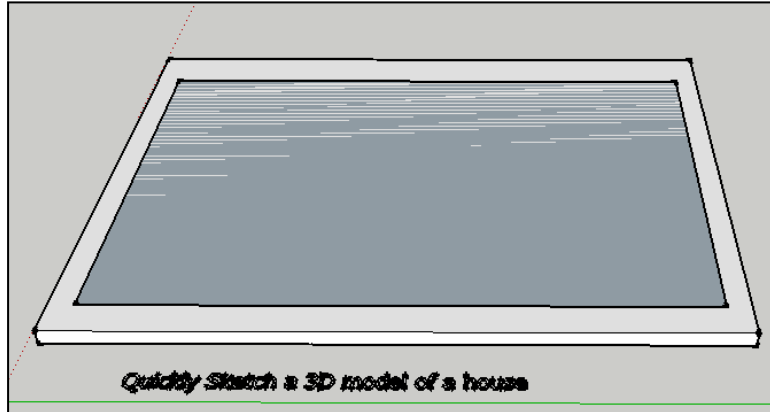
3b Tick Getting Started

3c Tick Large Tool Set

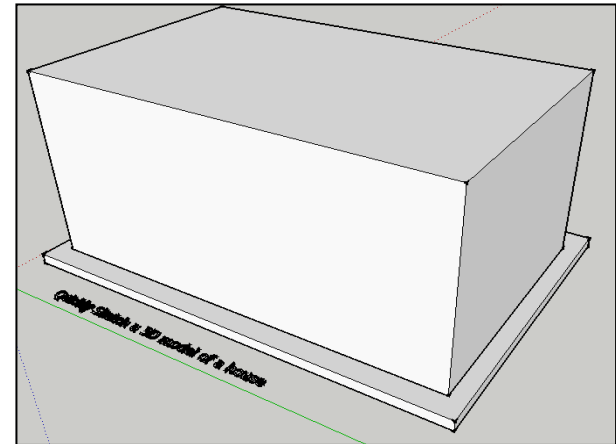
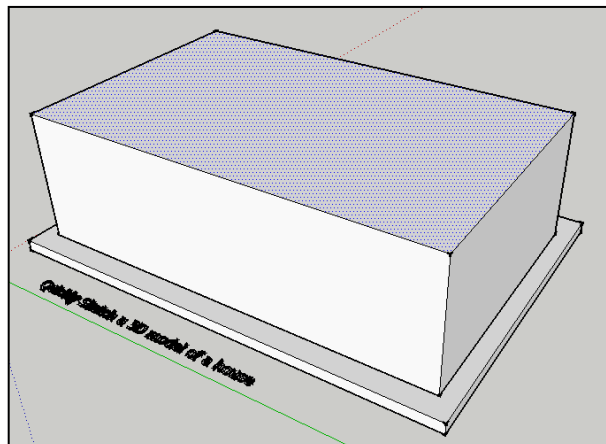
Note: this will place a tool bar across the top (**getting started**) and the side (**Large Tool Set**)



4. Now select the **rectangle tool** and then draw a rectangle on the white base given

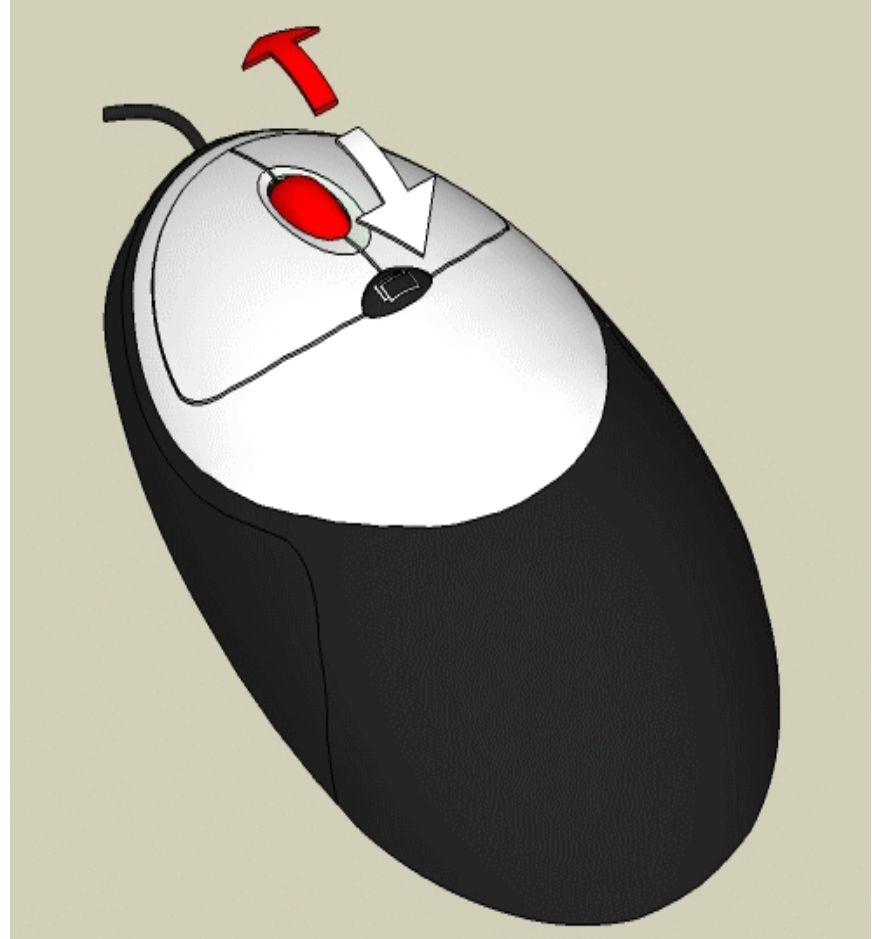


5. Using the **push/pull tool** hover over the rectangle you have just drawn, it will indicate you are over it by going dotted. Click and pull the rectangle upwards.



Zooming With a Scroll Wheel Mouse

6. Rolling wheel forward on a scroll wheel mouse zooms in on your model. Rolling the wheel backward on a scroll wheel mouse zooms out from your model.



7. If you have a mouse with a scroll wheel:

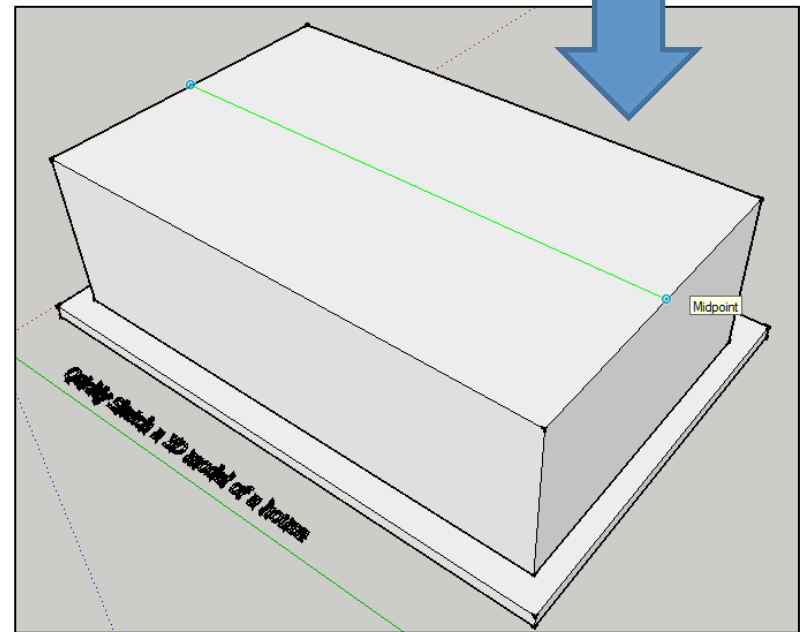
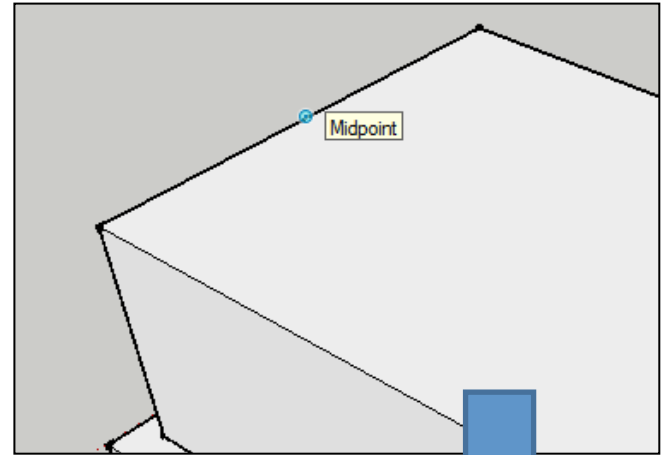
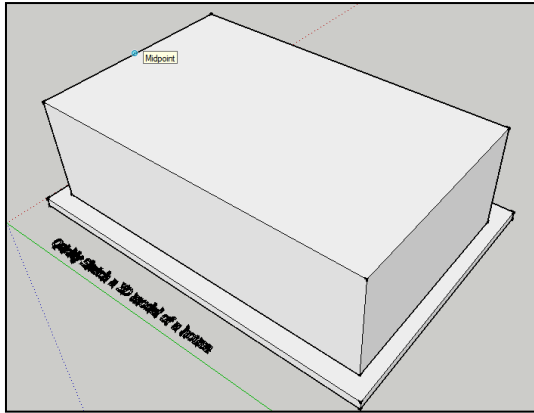
CLICK and **HOLD** the **SCROLL WHEEL** to orbit around a model

AdGIF UNREGISTERED - www.gif-animator.com





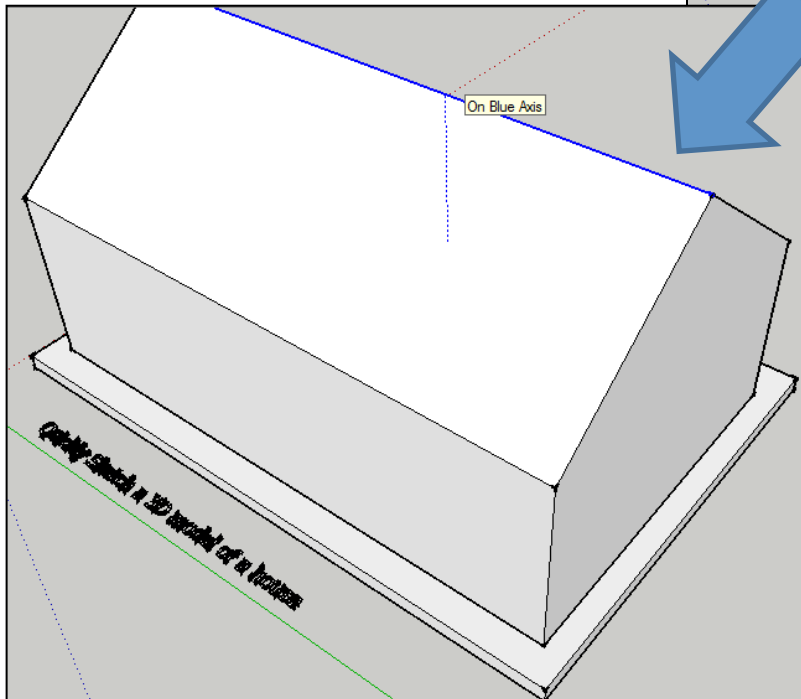
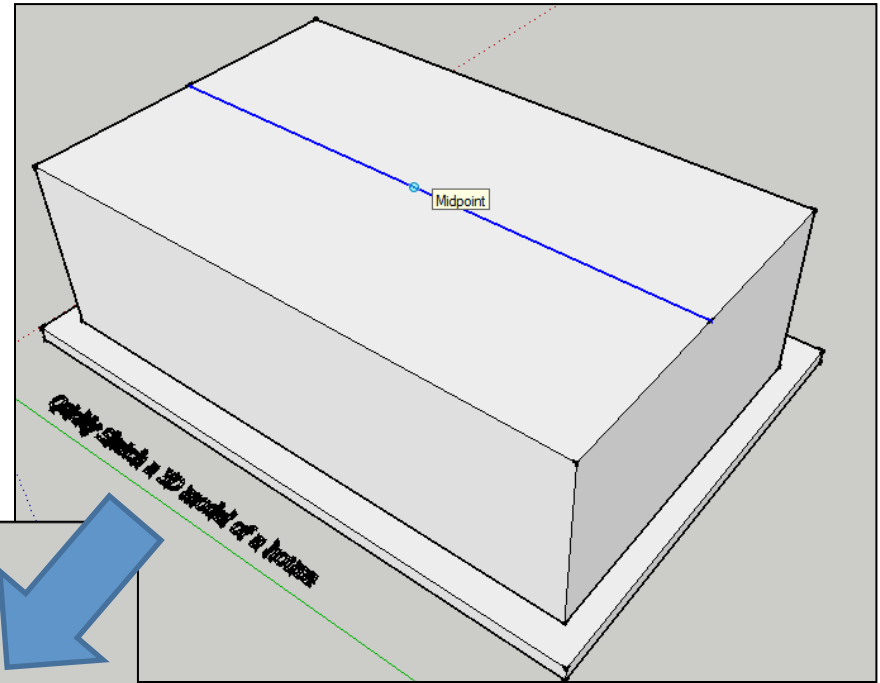
8. Select the **pencil tool** and then run along the edge of the cube. It will snap to the **Midpoint** as shown



9. Using the **pencil tool** draw a line directly across the middle of the cube. The line should go **green**. When at the other end it should also say **Midpoint**. Click to finish the line.

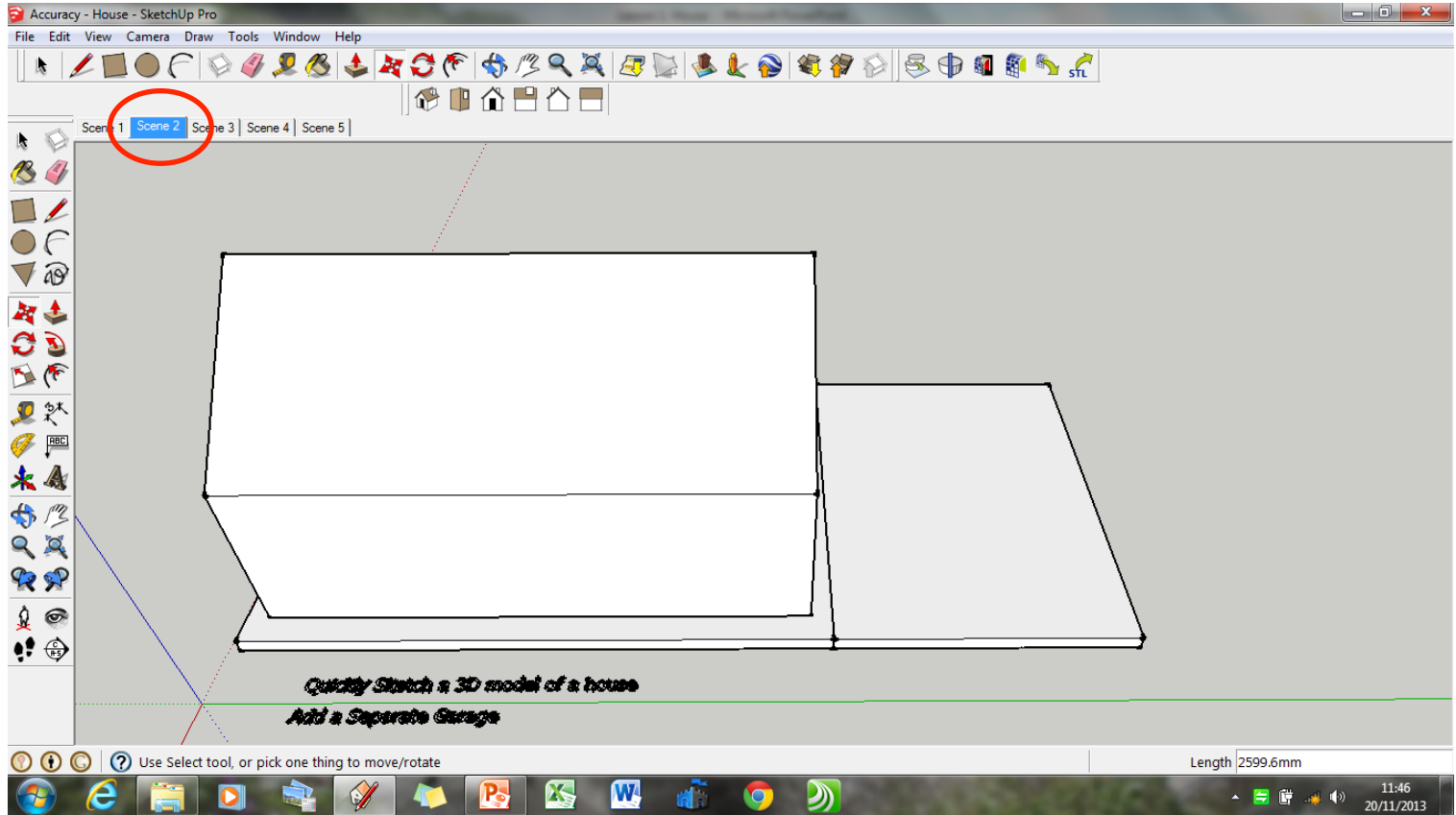


10. Select the **move tool** and then hover over the centre line you have just drawn. It will turn **blue**.



11. Using the **move tool** pull the centre line vertically upwards to produce a roof. To ensure you are pulling it vertically upwards it should say **On Blue Axis**.

12. Select the **SCENE 2** and read the instructions.

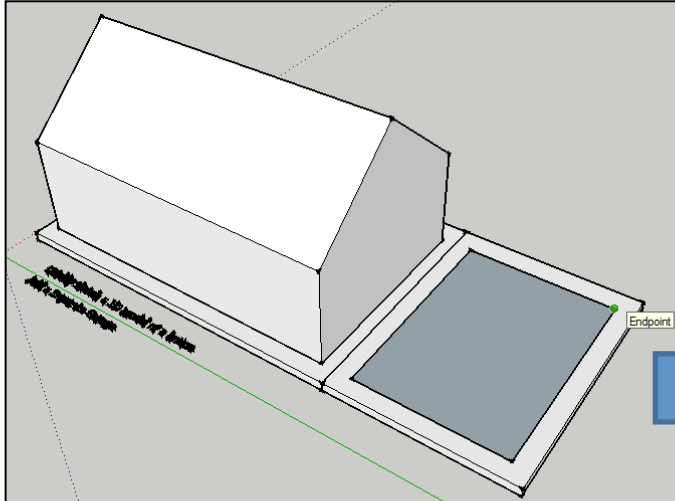


Add a separate garage.

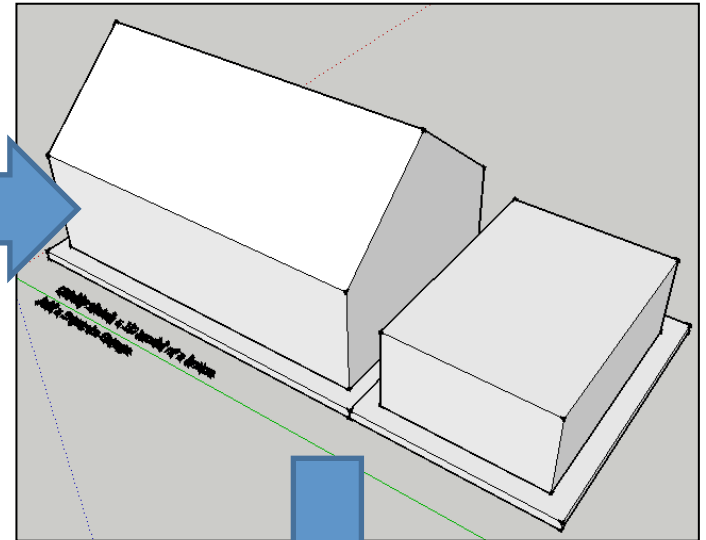
Feel free to attempt this yourself or read on for guidance on this task.



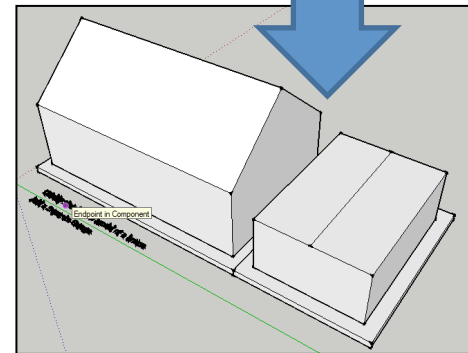
13. Select the **rectangle tool** and then draw a rectangle show.



14. Using the **push/pull tool** hover over the rectangle you have just drawn, it will indicate you are over it by going dotted. Click and pull the rectangle upwards.

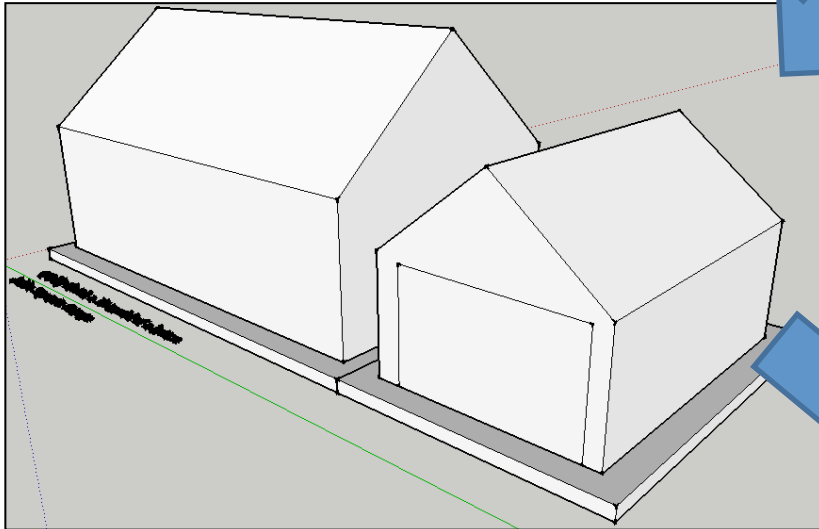
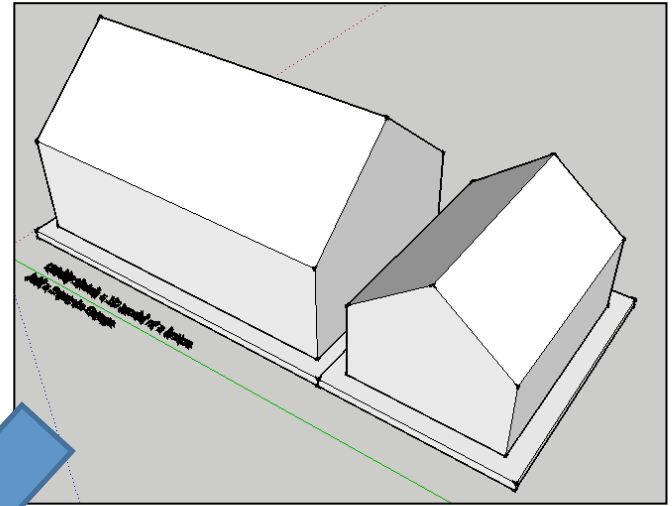


15. Select the **pencil tool** and then run along the edge of the cube. It will snap to the **Midpoint**. Using the **pencil tool** draw a line directly across the middle of the cube. The line should go **green or red** depending upon which direction you draw it. Click when says **Midpoint** at the other side.

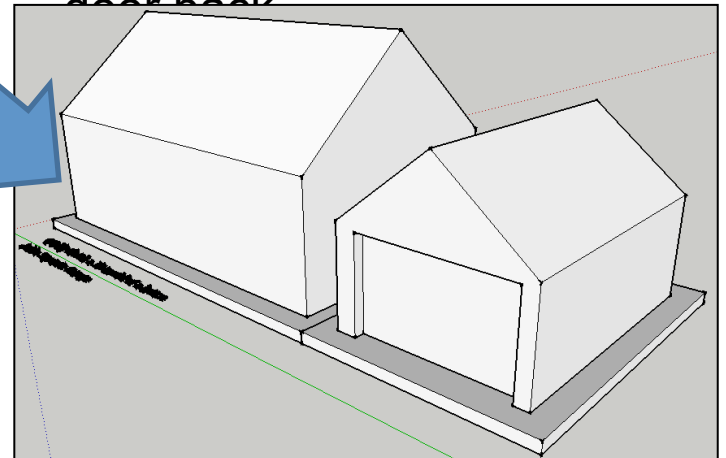




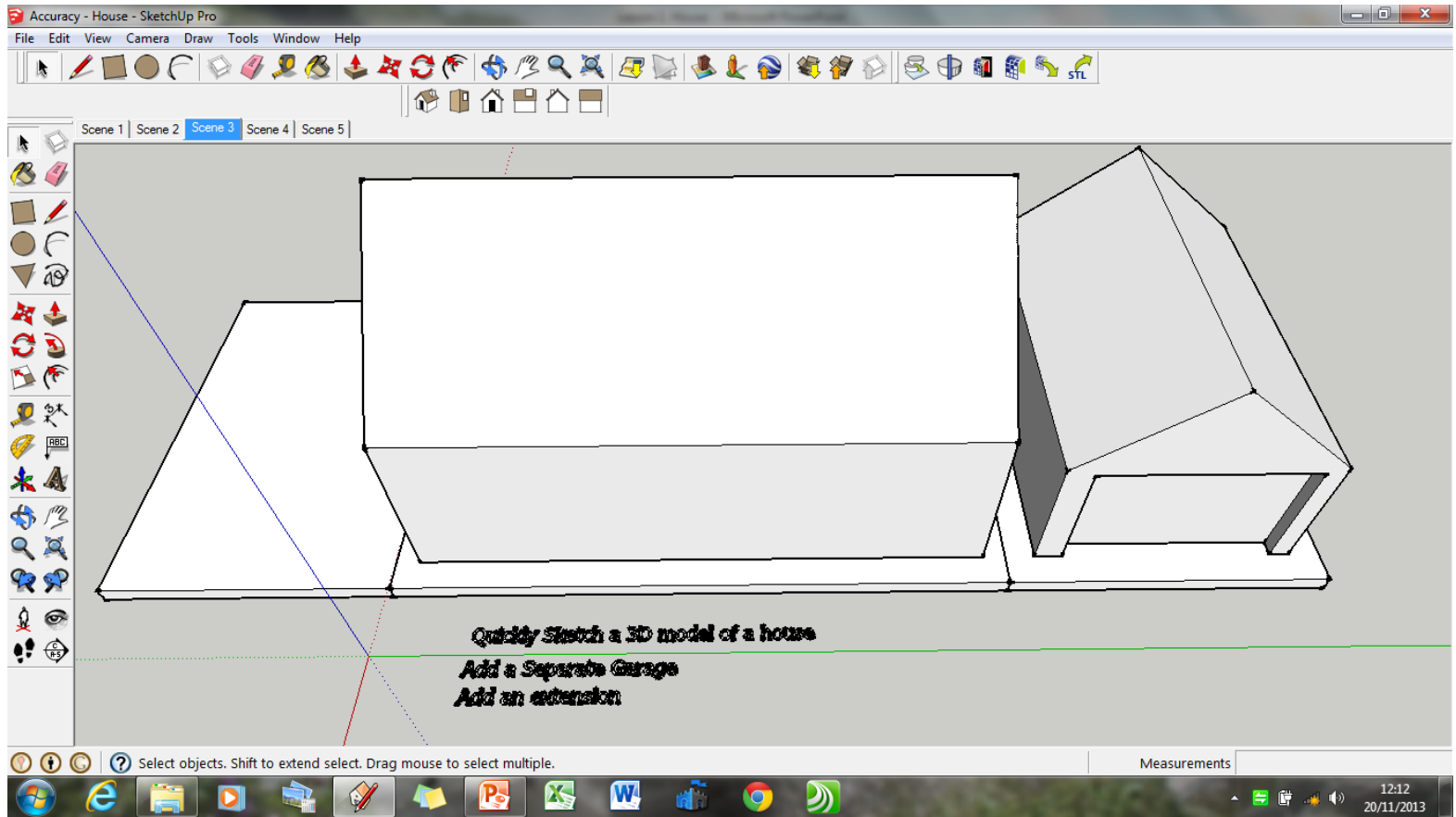
16. Select the **move tool** and then hover over the centre line you have just drawn. It will turn **blue**. Using the **move tool** pull the centre line vertically upwards to produce a roof. To ensure you are pulling it vertically upwards it should say **On Blue Axis**.



17. Use the **square tool** and draw a garage door. Then use the **push pull** tool to set the door back.



18. Select the **SCENE 3** and read the instructions

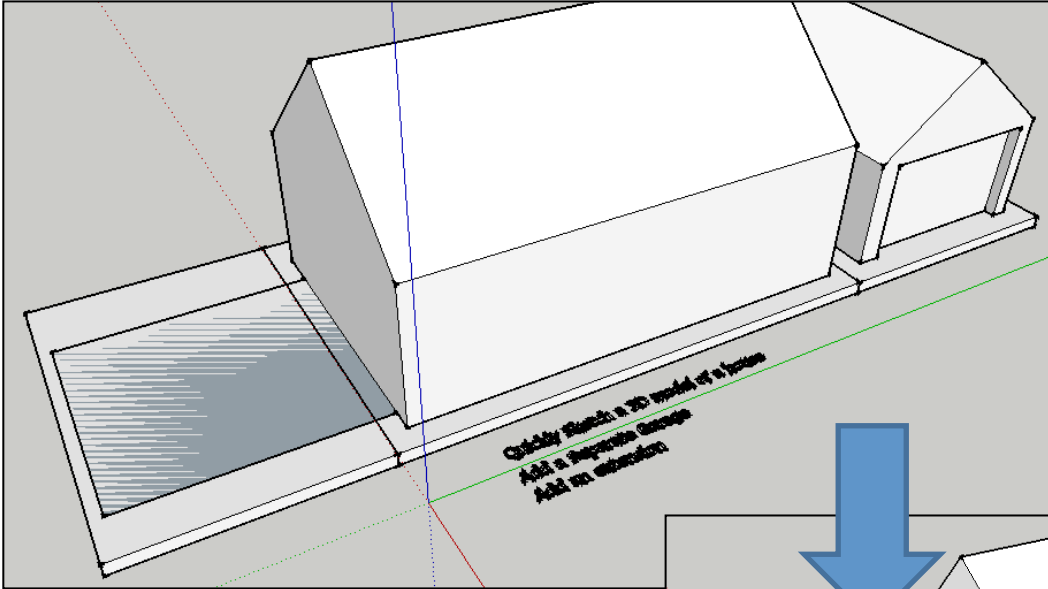


Add an extension.

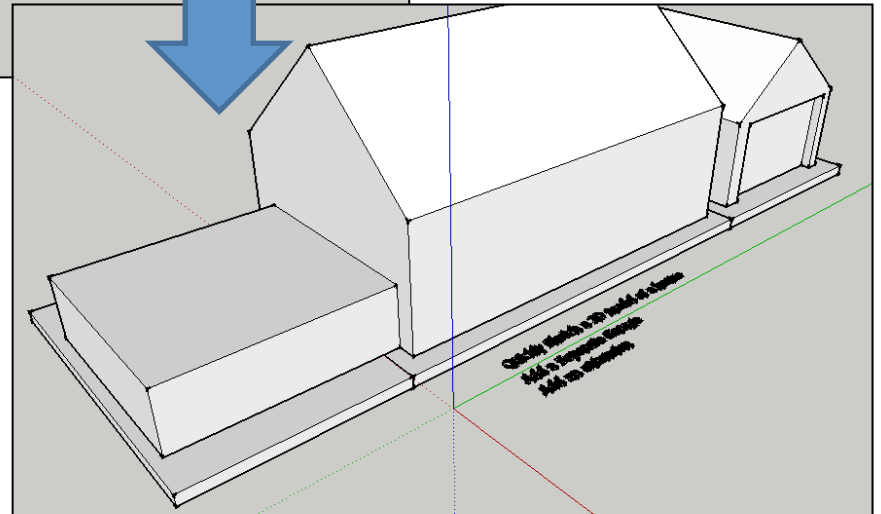
Feel free to attempt this yourself or read on for guidance on this task.



19. Now select the **rectangle tool** and then draw a rectangle on the white base shown

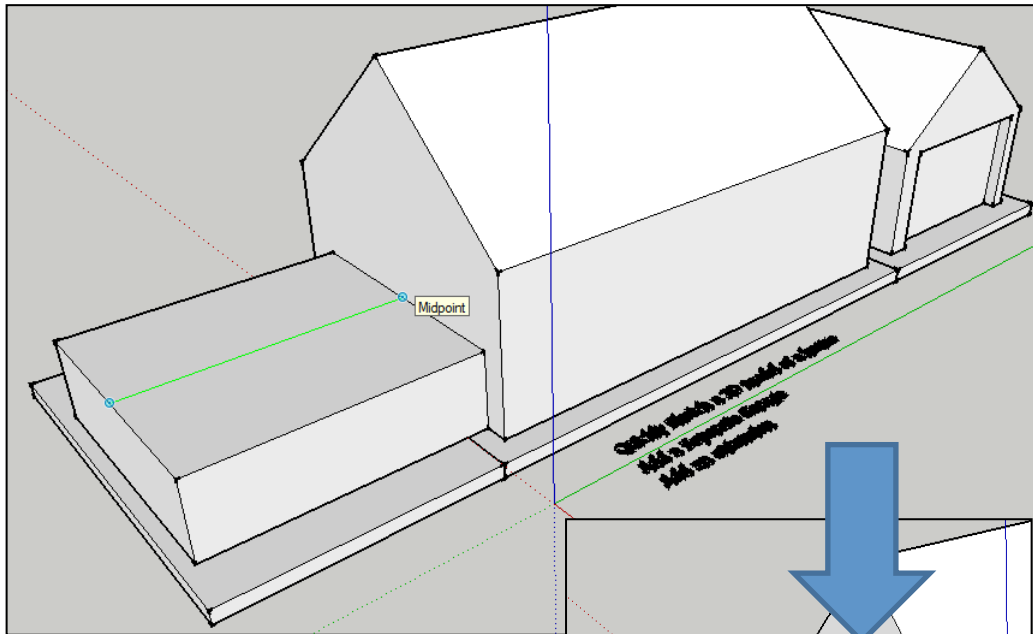


20. Use the **push pull** tool to add height to the extension

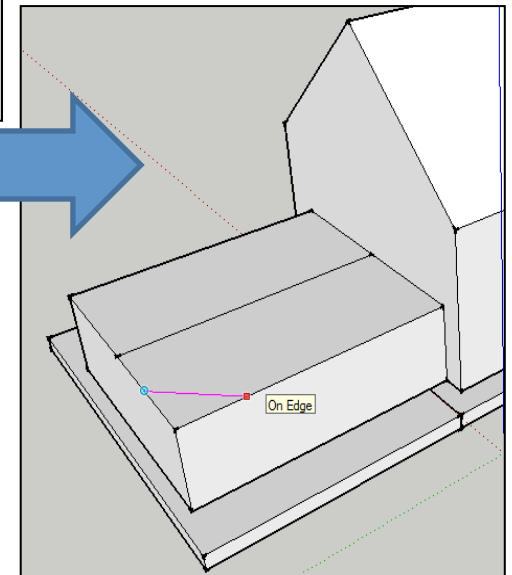
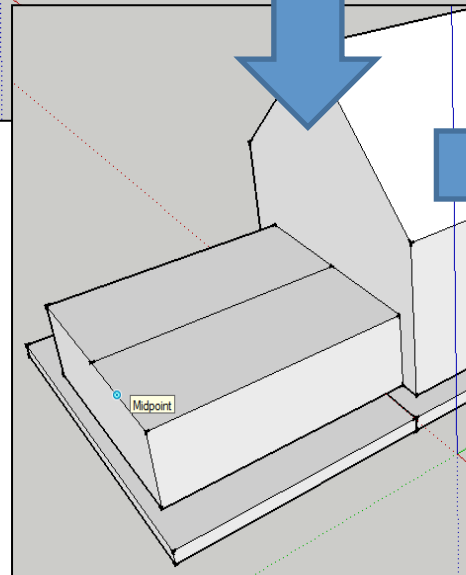




21. Draw a centre line across the cube using the pencil tool



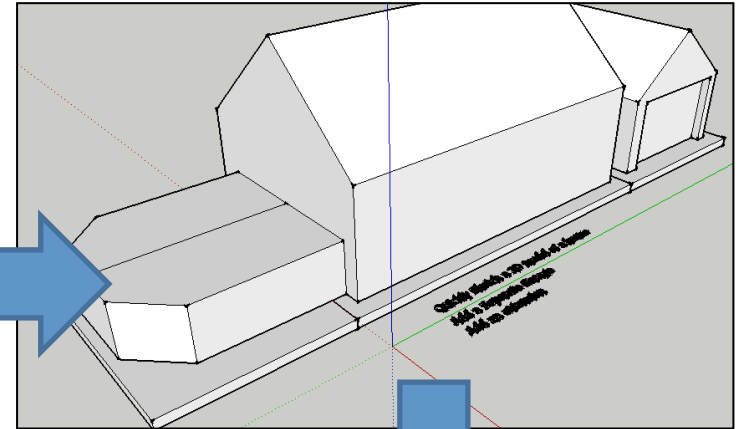
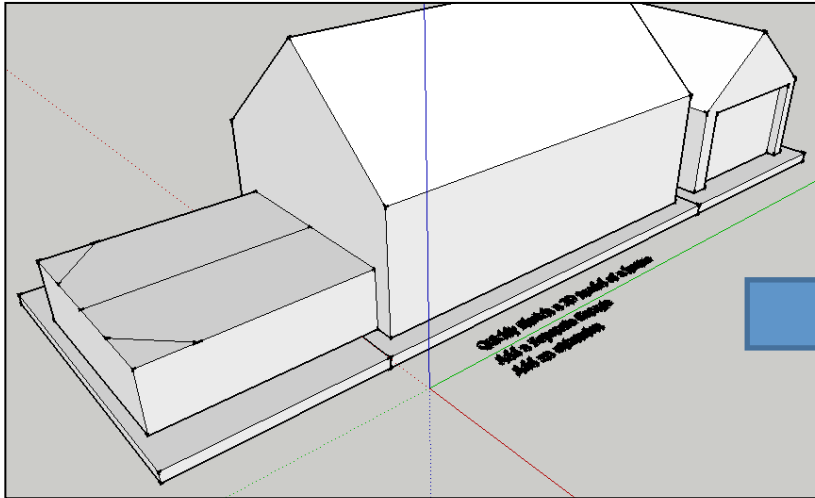
22. Run your **pencil tool** across the edge of the cube until you find the centre line between the line you have just drawn and the edge.



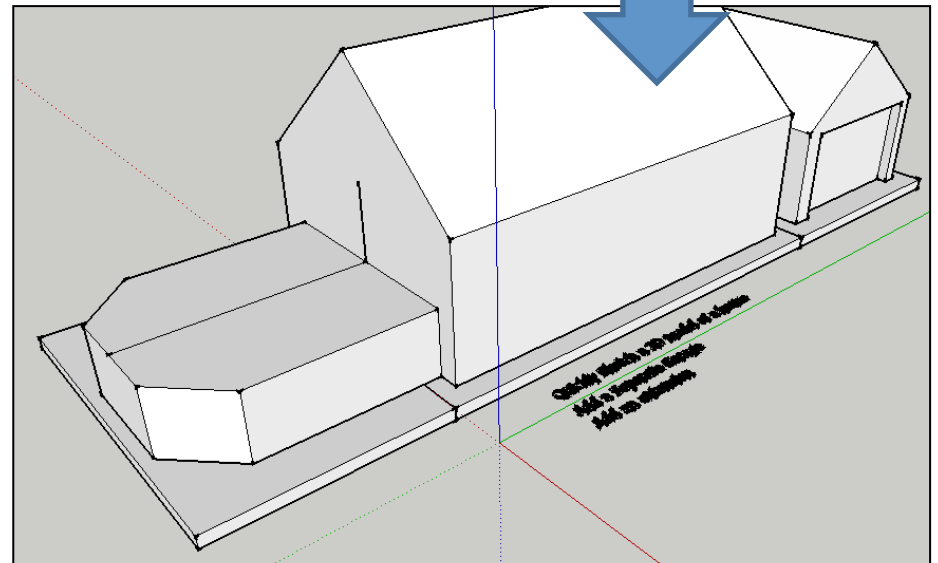
23. Draw a line at an angle to the other edge. It will go **PINK** to show the angle is 45 degrees



24. Repeat the process on the other side. 25. Use the **push pull** tool to remove these corners

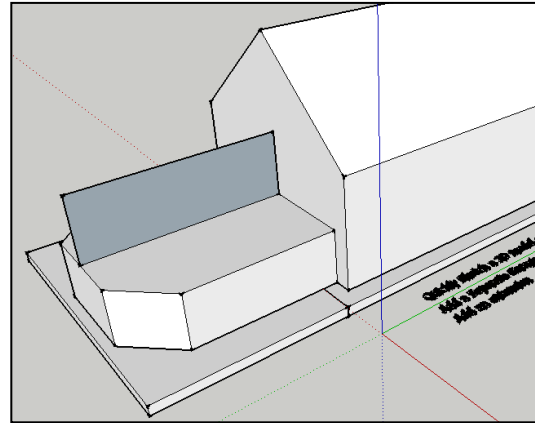


26. Use the **pencil tool** to draw a vertical line on the back wall

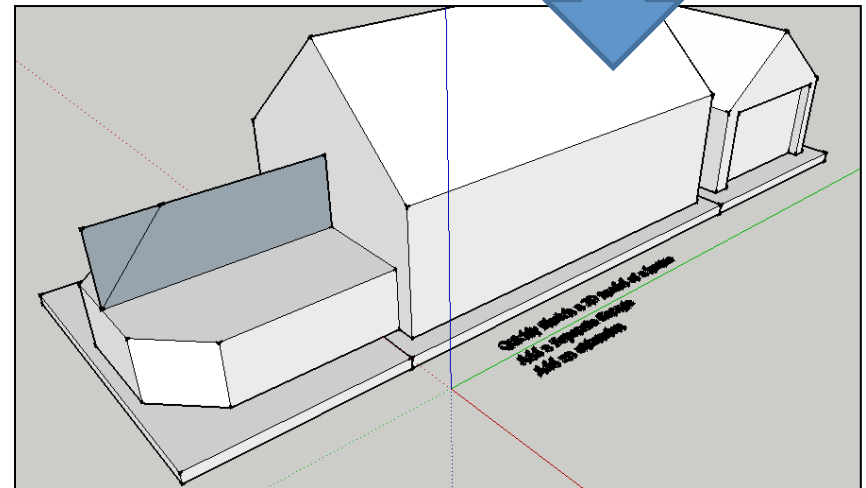
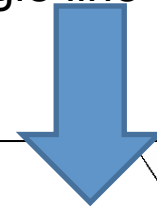




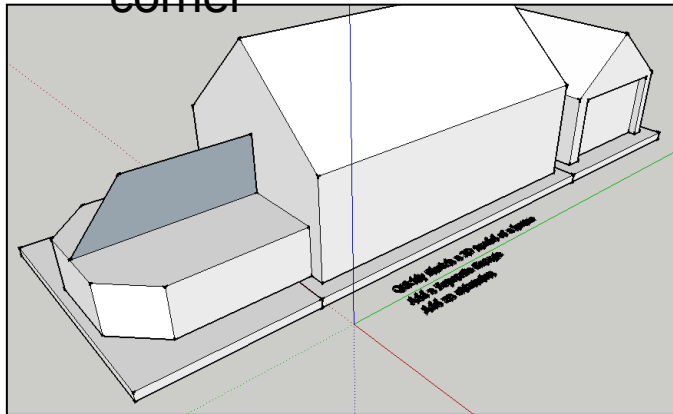
27. Now select the **rectangle tool** from the front of the extension to the top of the line you have just drawn



28. We are going to shape this like a conservatory roof. Use the **pencil tool** to add an angle line

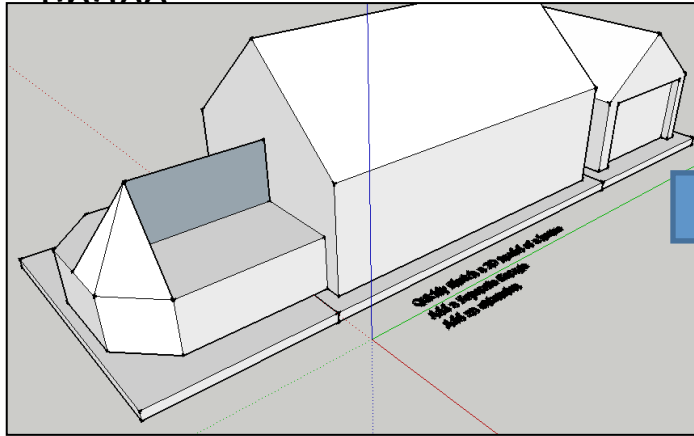


29. Use the **rubber tool** to delete the corner

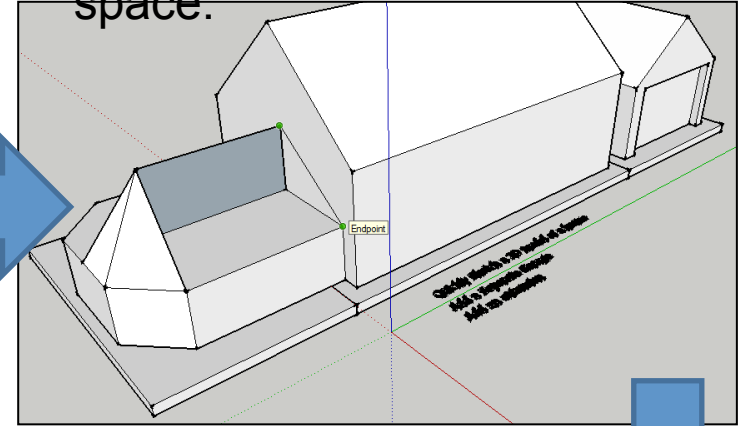




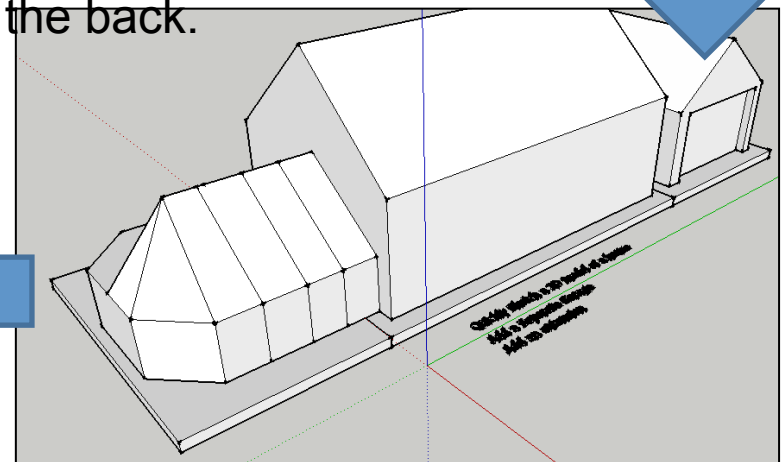
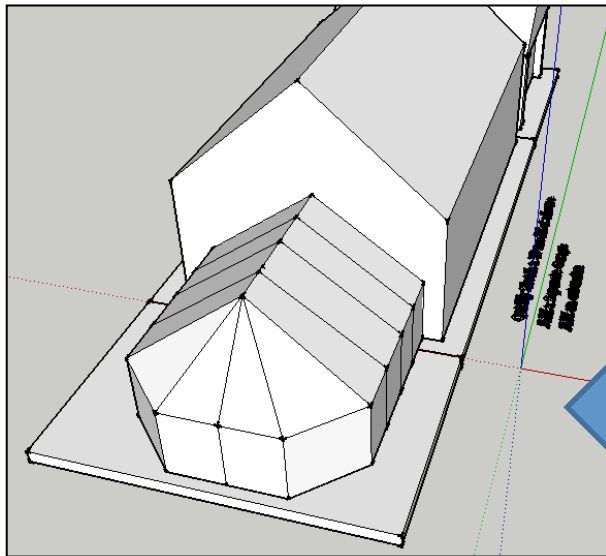
30. Using the **pencil tool** draw lines down from the corner as shown. These will fill in the space.



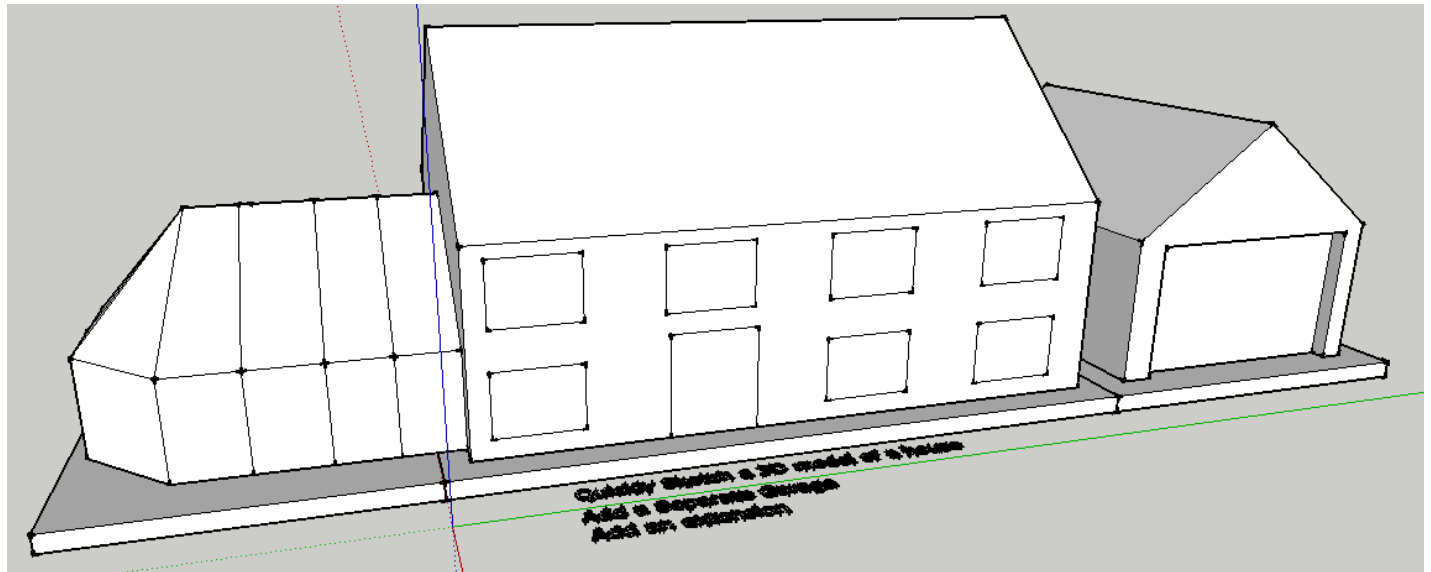
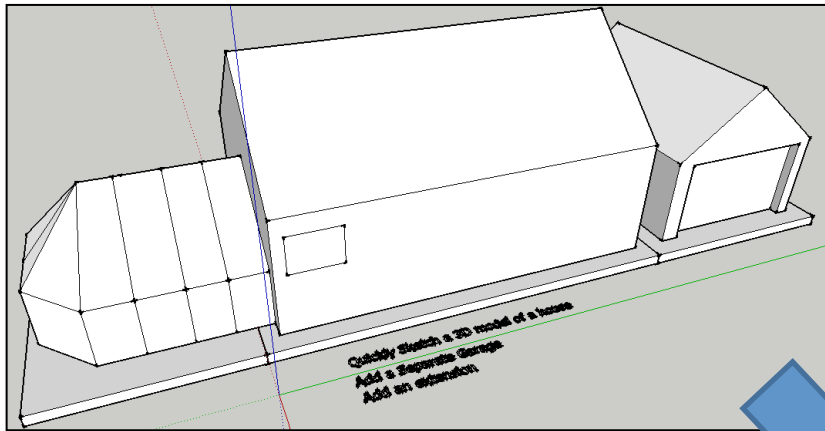
31. Using the **pencil tool** draw lines down from the corner as shown. These will fill in the space.



32. Using the **pencil tool** add more windows and repeat on the back.

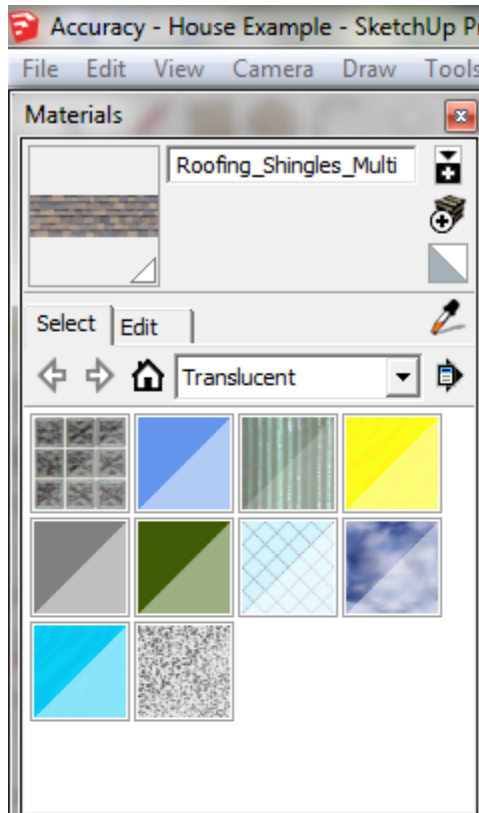


33. Use the **rectangle tool** to add window and doors

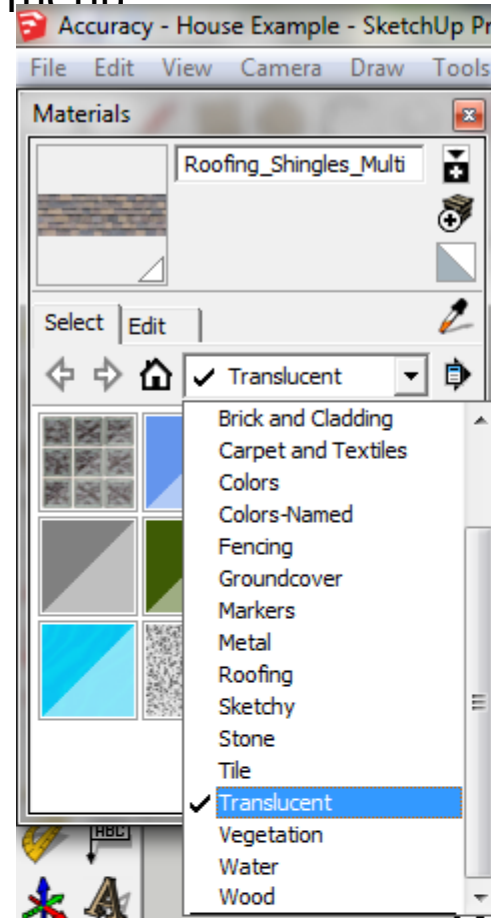




36. Now select the **colour bucket** from the menu.



36. Now drop down menu from the **colour bucket** menu





37. Now colour your house using the categories shown.

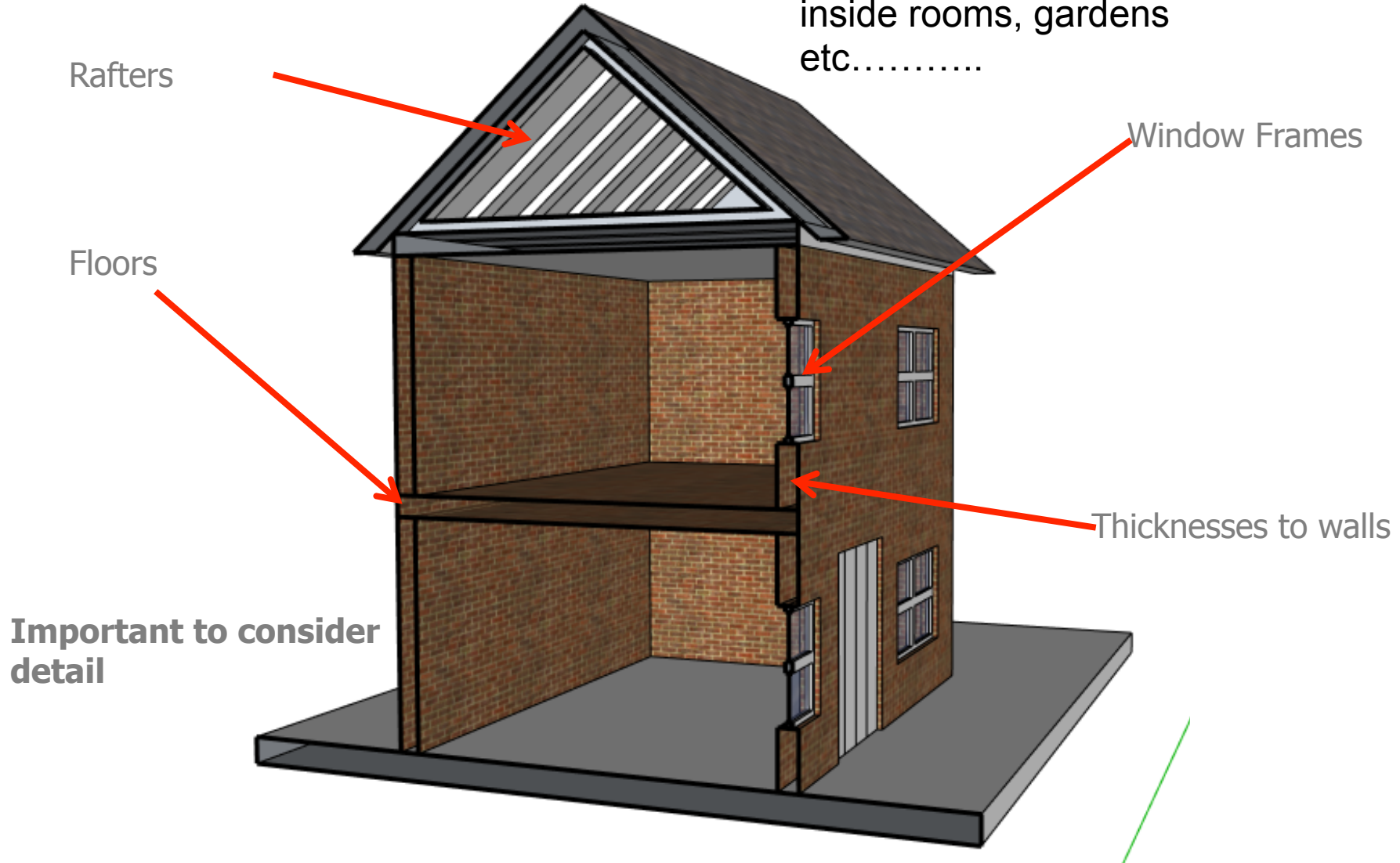


Add an extension.
Use translucent for glass.

38. Now add your own details or design your own house. Don't forget to print screen this one and put on your CAD tutorials page.

Extension

TASK: Design your own house and try and add details such as inside rooms, gardens etc.....



Extensions:

- Have a go at redrawing your house. This time think about adding as much detail as possible. Have a go at using the "offset" tool to draw walls and interiors

