



# Design out the box

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

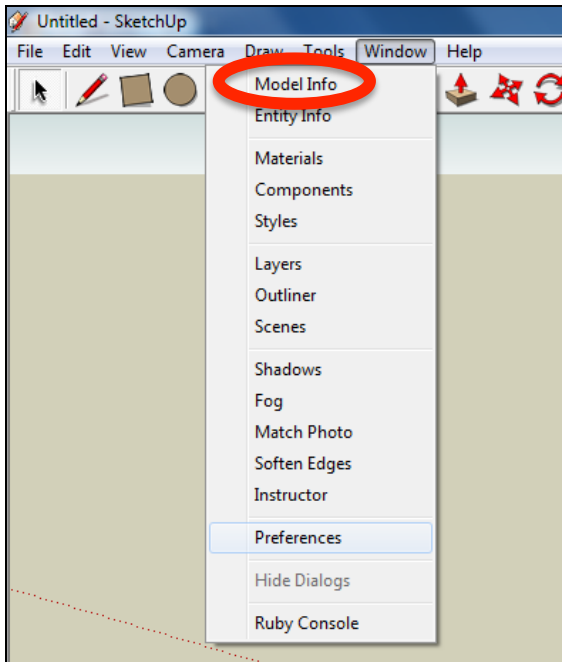
- Link basic shapes
- Use the Arc tool
- Use the Follow Me tool to produce a rounded edge
- Use construction lines/points
- Colour/render your finished toy boat

# Skills to be used in this project...

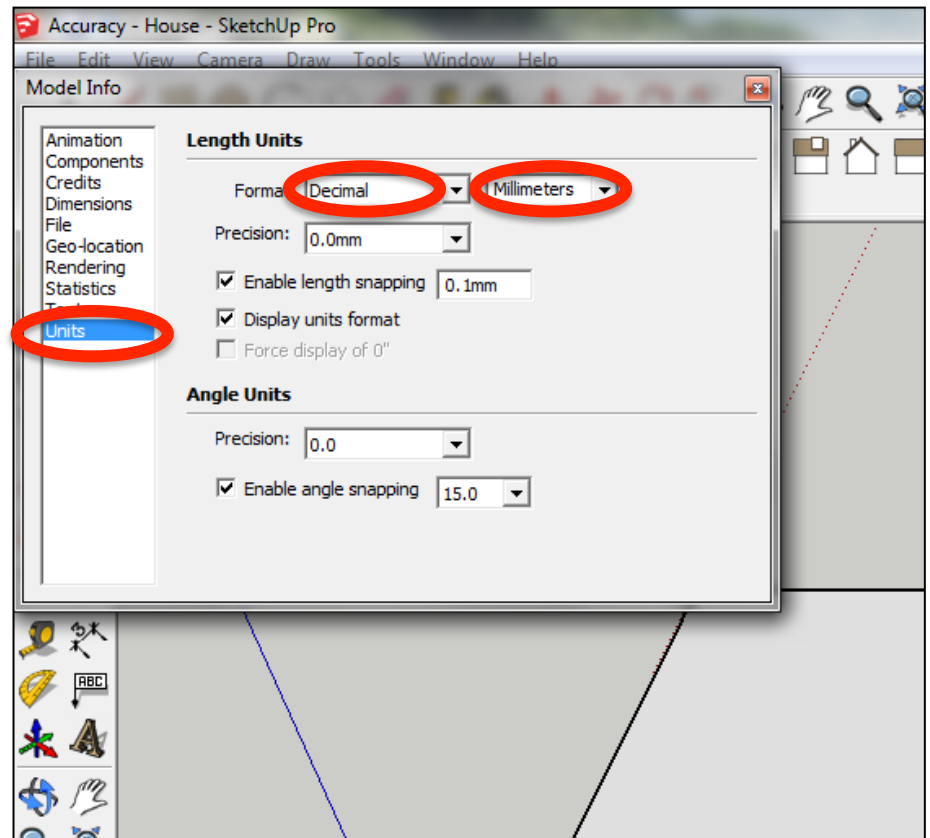
Basic Skills	New and Higher Skills
Zoom tool	Construction lines and points
Orbit tool	Tape Measure tool
Pan tool	Arc tool
Line tool	Follow Me tool
Rectangle tool	Loading new toolbars
Circle tool	Paint Bucket tool
Eraser tool	
Push/Pull tool	

**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.



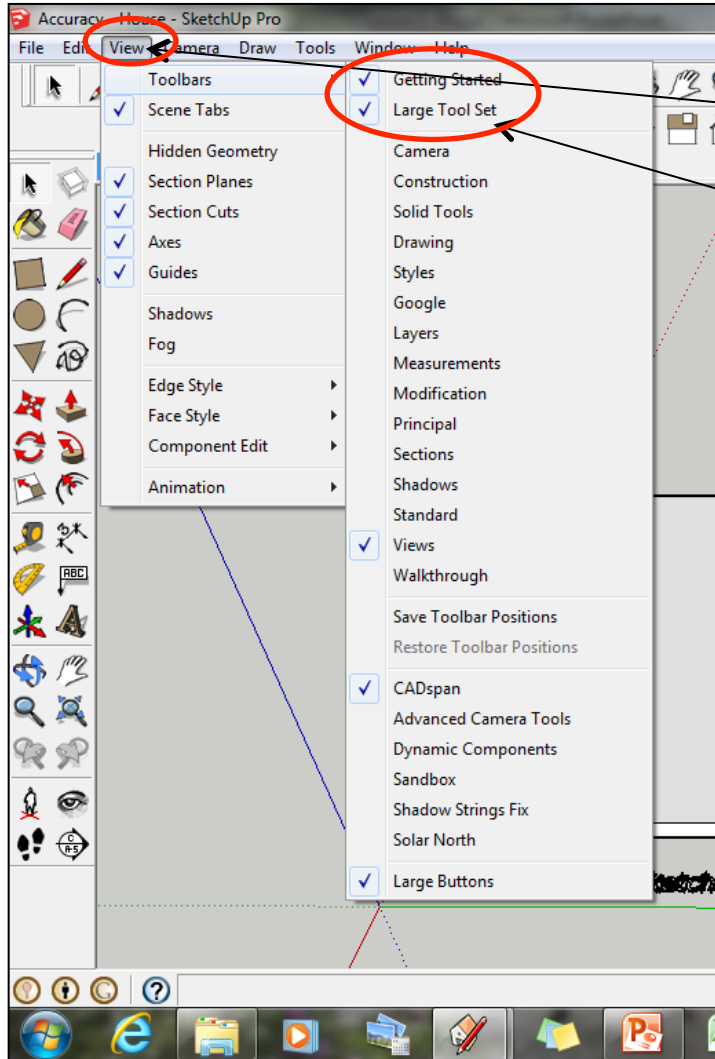
1. Open the sketch up drawing. Once you have opened SketchUp, go to **Window** and select **Model Info**



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**

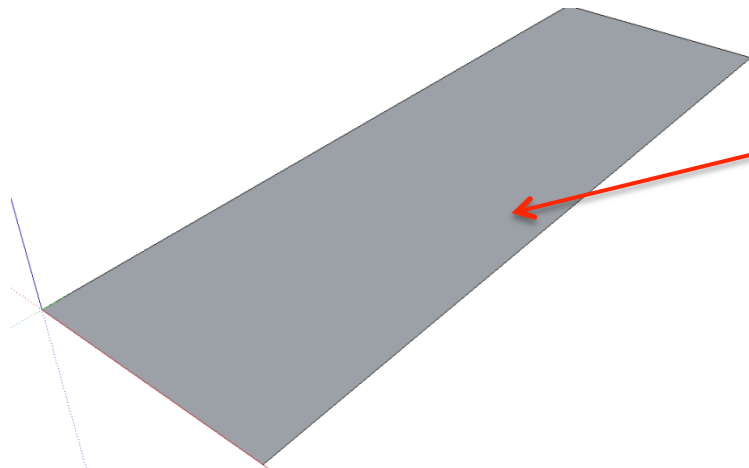
3b Tick Getting Started

3c Tick Large Tool Set

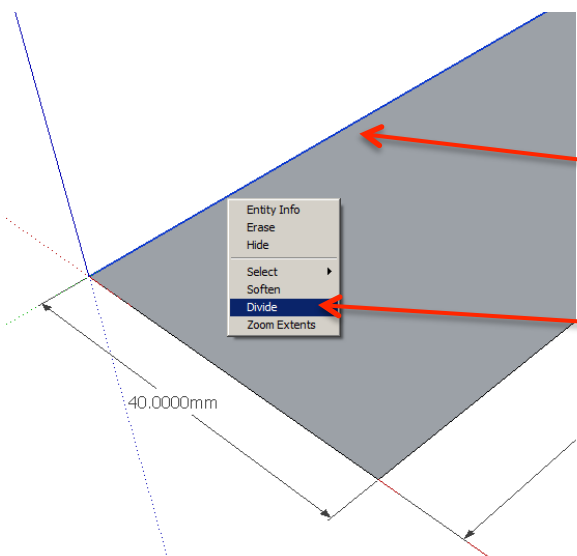
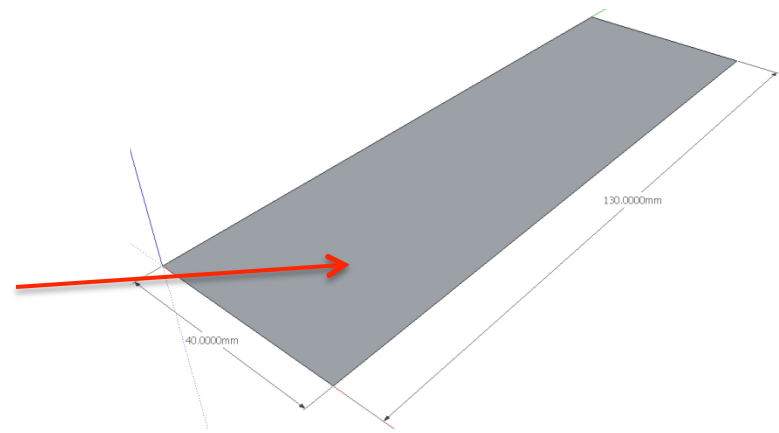
**Note:** this will place a tool bar across the top (**getting started**) and the side (**Large Tool Set**)



1. **Click** on the **rectangle tool**. Start drawing a square.

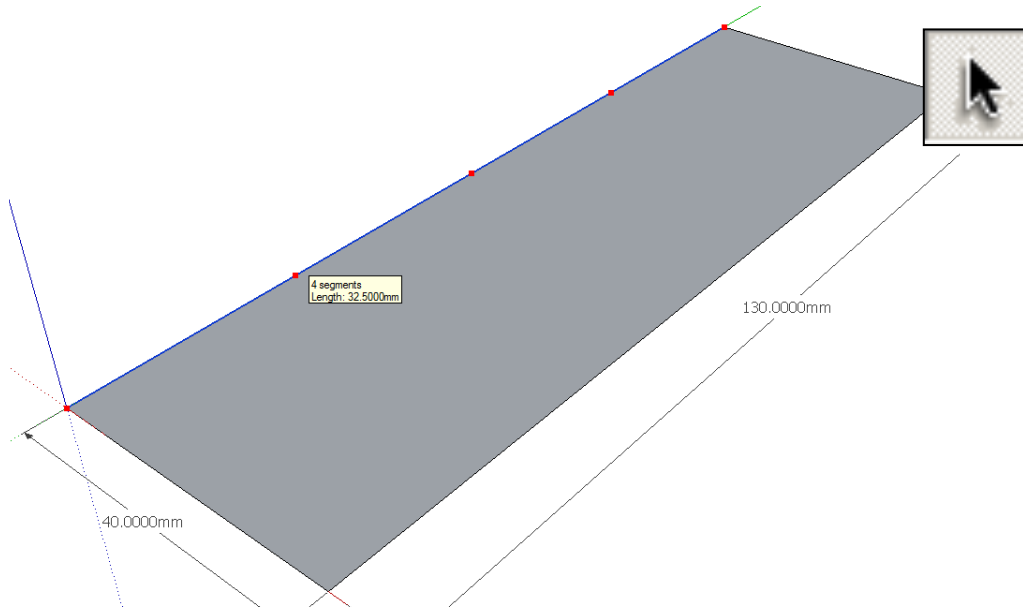


2. Type in '40,130' and press **Enter**. Click on the **zoom extents** symbol.

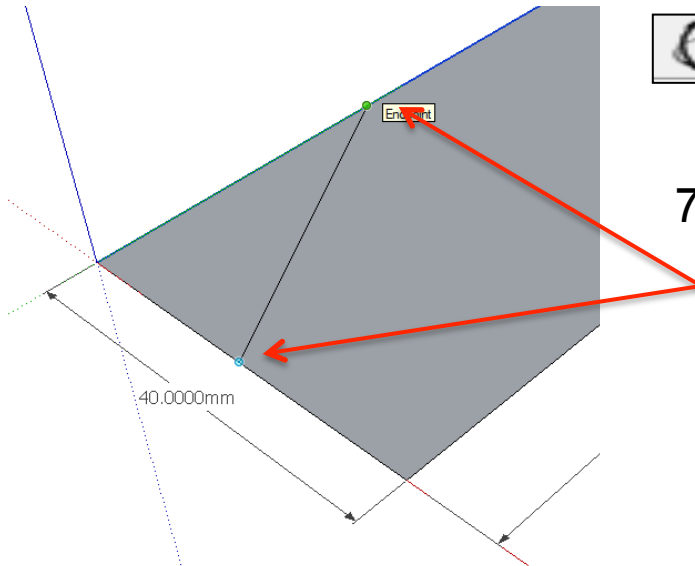


3. Use the **Select tool** and click on the line on the side of rectangle shape. The line should be **highlighted in blue**.

4. **Right click** on the mouse whilst on the **blue line** to produce the menu shown left and **click** on **divide**

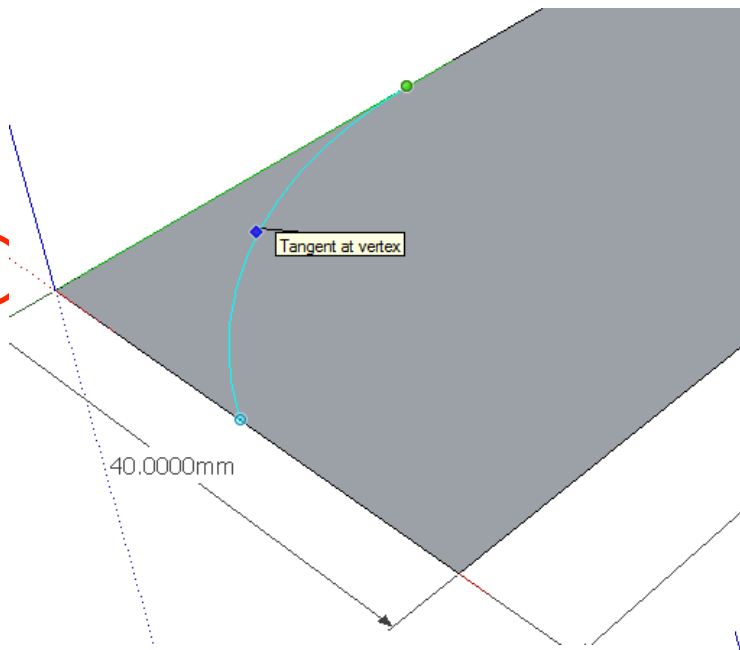


5. Using the mouse whilst on the **blue line** move it right or left. You are looking to **divide** it by **4 segments**. You can also type in '4' and enter.



6. Now select the **Arc** tool.

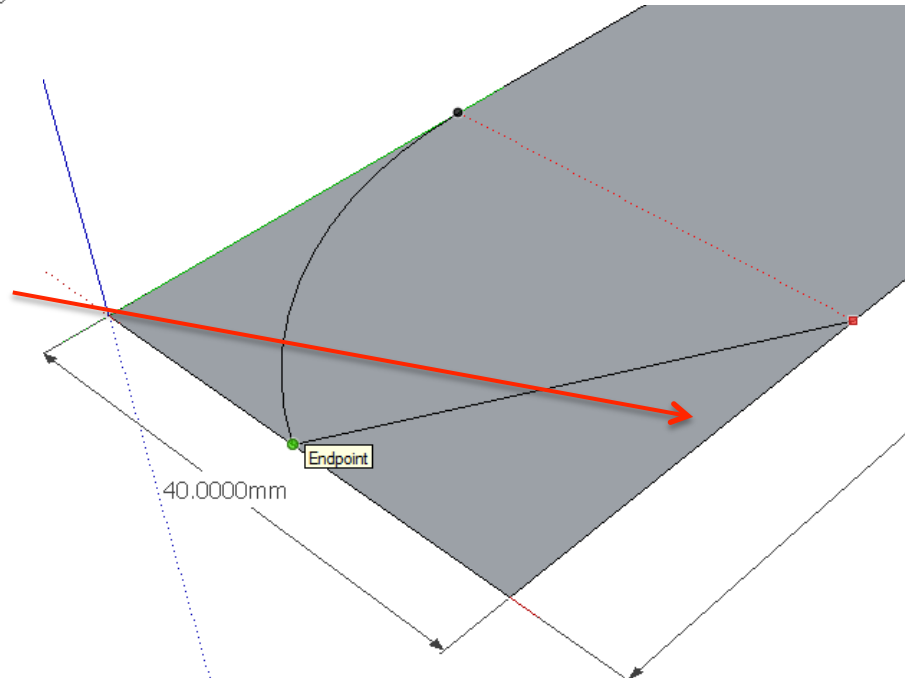
7. With the **Arc tool**, draw a line to join the two construction points. The first divide point on the **left-hand side** it will say **endpoint** and the **centre point** at the front of the boat.



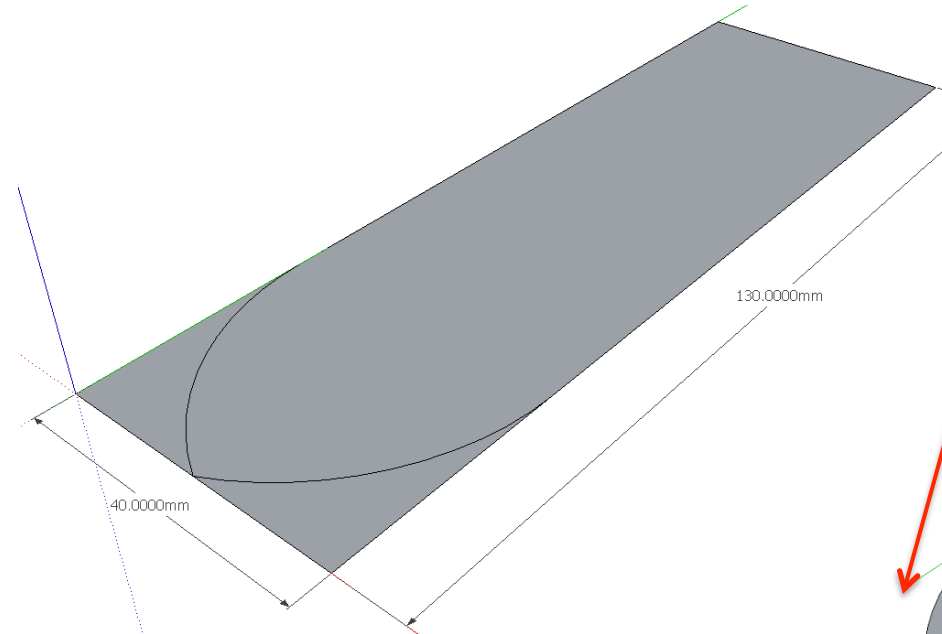
8. With the **Arc tool**, push the **arc out**. Look for the line to go **blue** or type in '5' and **press enter**.



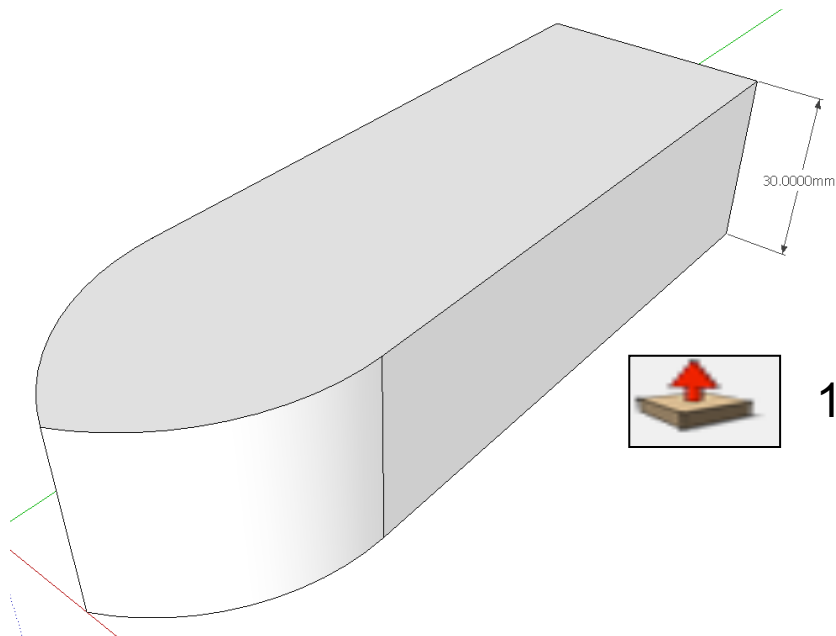
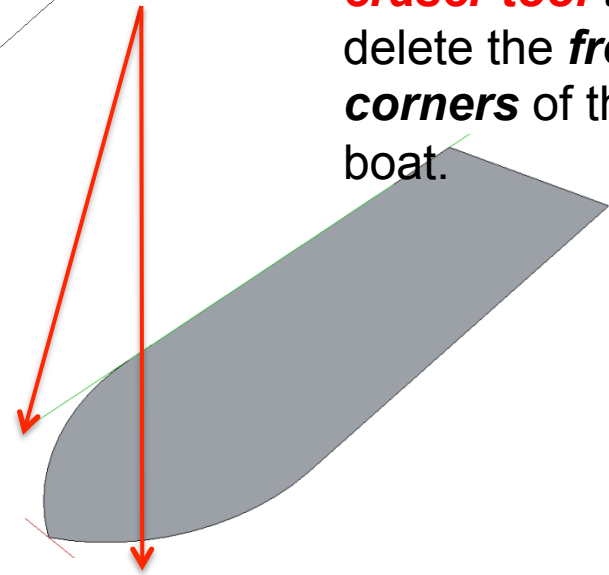
9. **Repeat** the process on the opposite side.



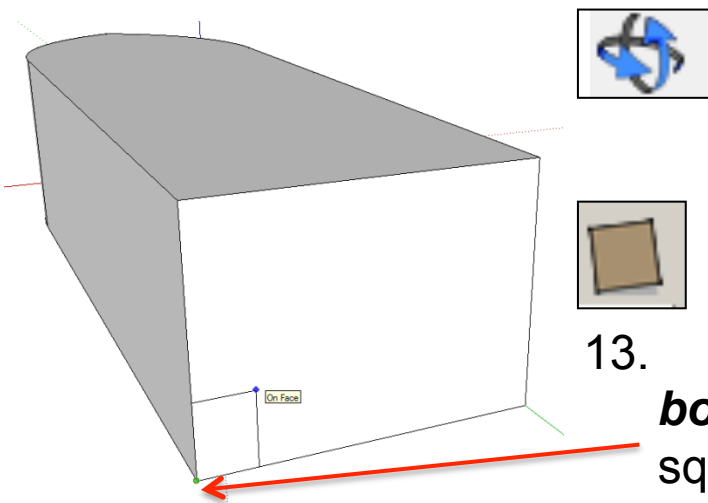




10. Use **the eraser tool** to delete the **front corners** of the boat.



11. Use **the push pull tool** to raise the boat. Type in **'30'** and **press enter**.

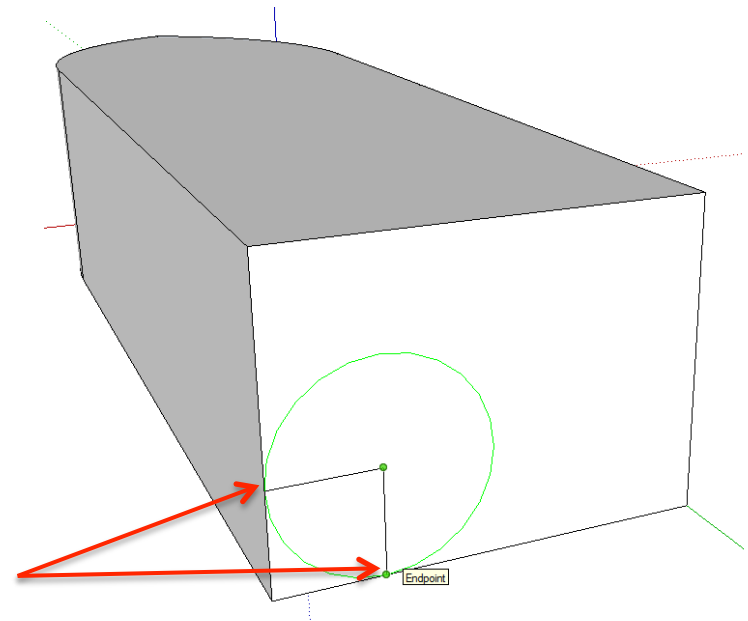


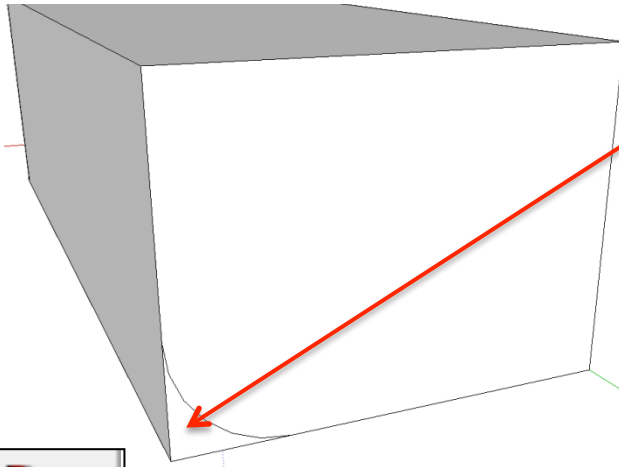
12. Use **the orbit tool** to rotate the boat so you can see the rear of it.

13. Use **the square tool**. Starting in the **bottom left hand corner**. Draw a square. Type in '10,10' and **press enter**.



14. Use **the circle tool**. Starting in the **centre of the square**. Draw a circle outwards. The **circumference** of the circle should touch either of the two endpoints shown.





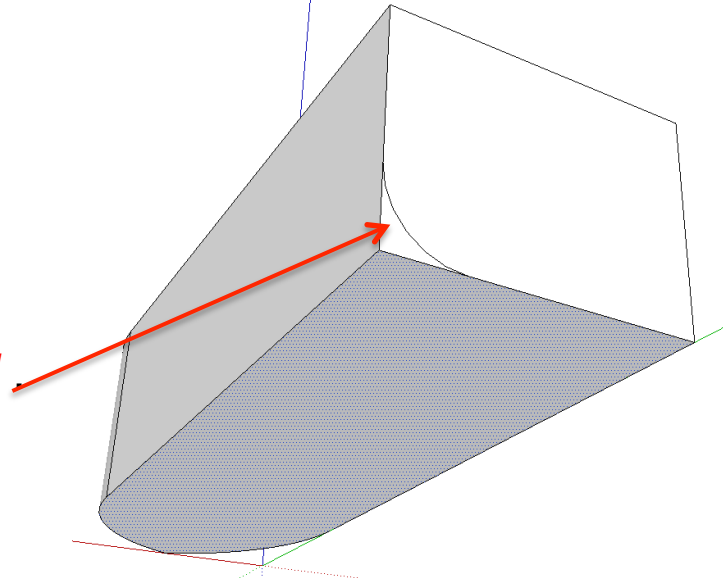
15.

Use the **eraser tool** to erase the parts of the circle not needed..



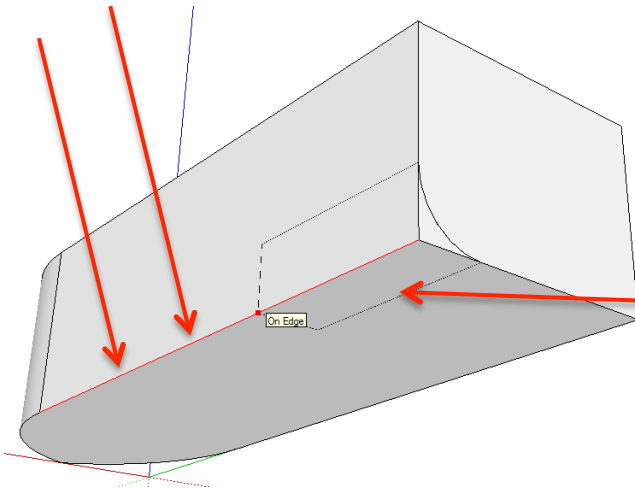
16.

Use the **follow me tool**. Click on the corner segment shown.



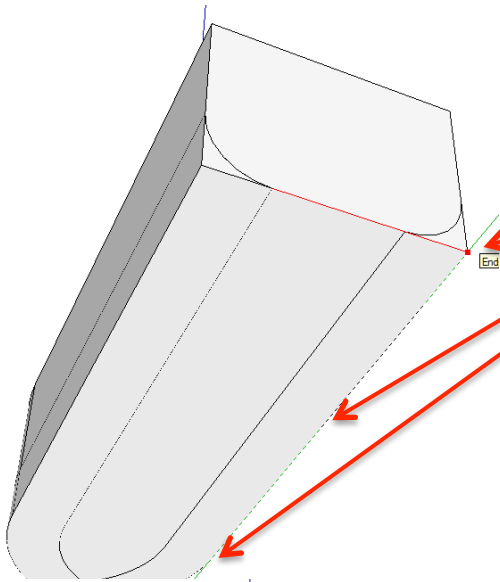
17.

Use the **follow me tool**. Push the segment back. Hover over the edge shown to help guide the follow me tool.

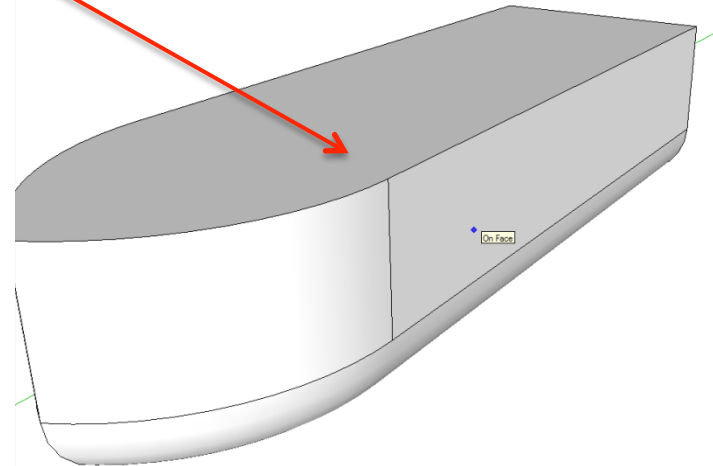
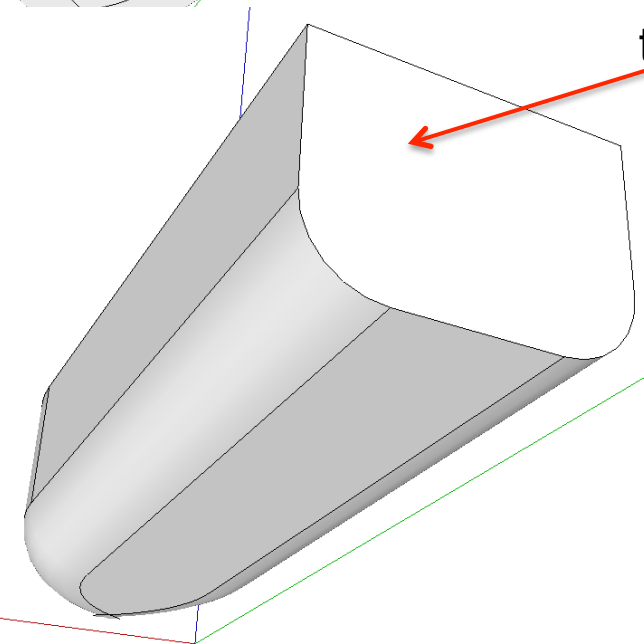


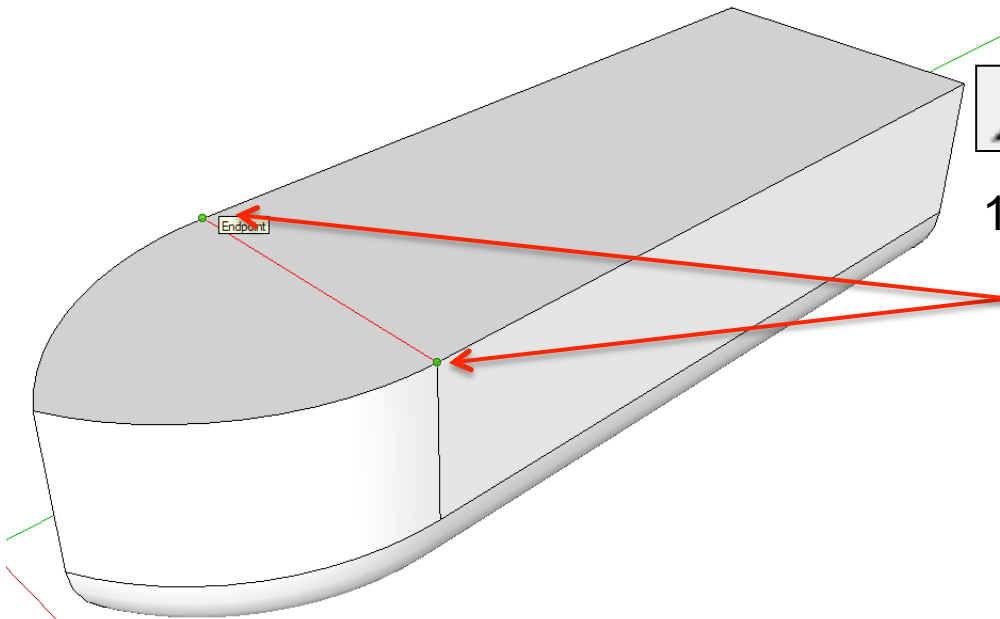


18. Using the ***follow me tool*** . Push the segment around to the opposite side and corner shown

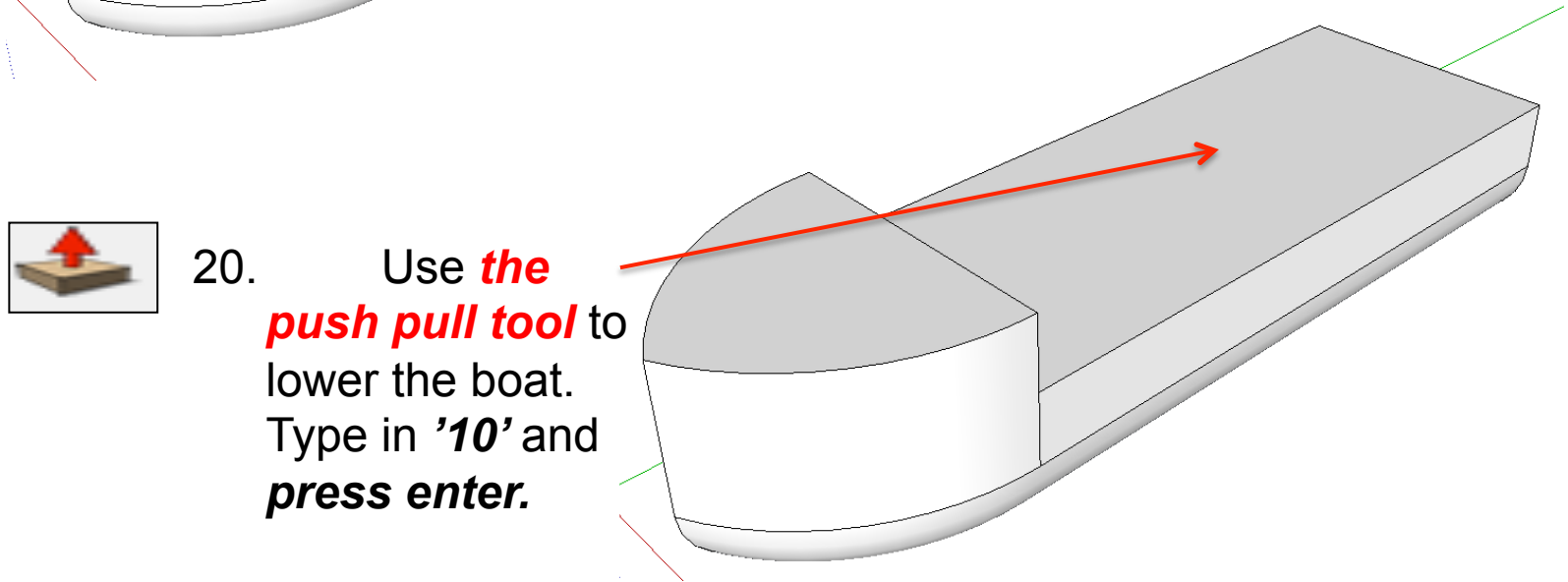


Your boat should now look like this.....

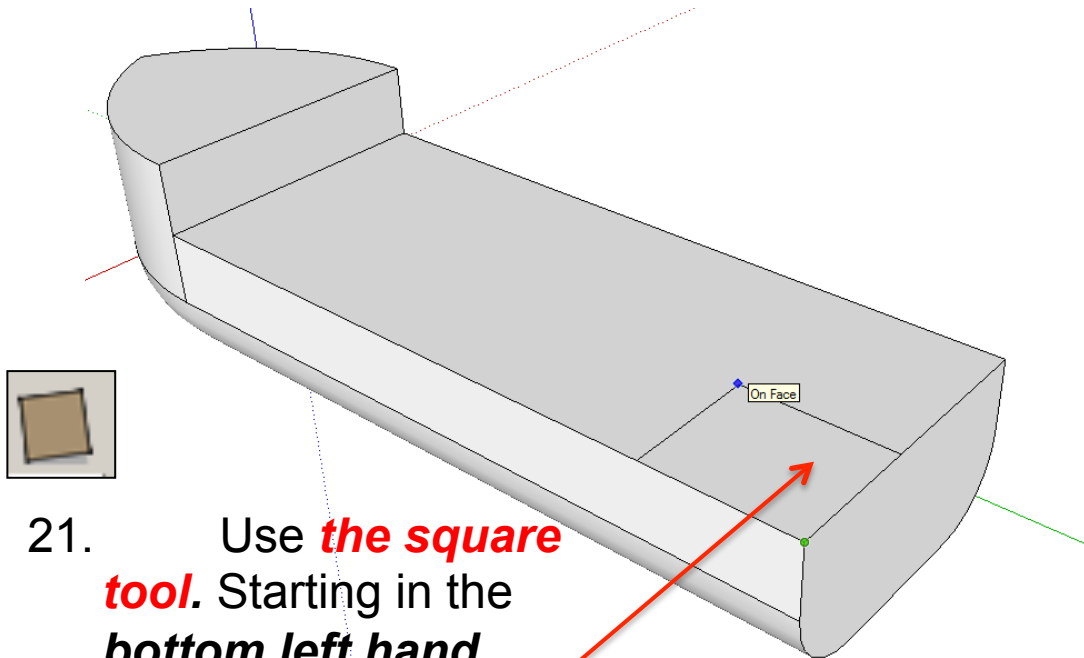




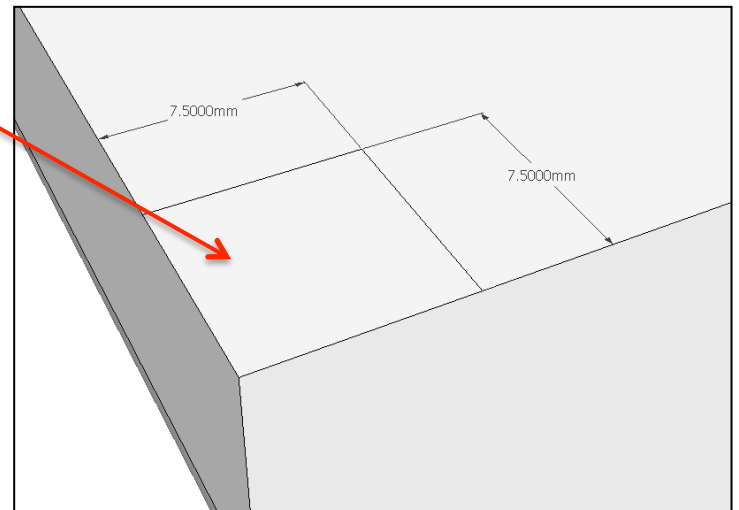
19. Using the **pencil tool**. Draw a line across from **endpoint** to the other as shown

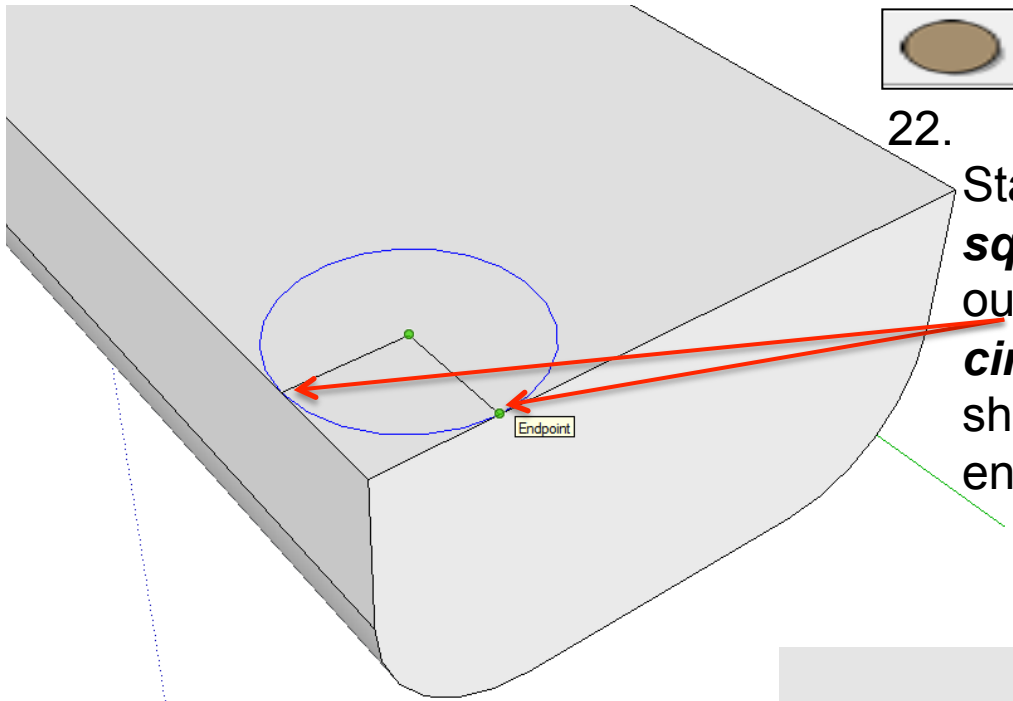


20. Use **the push pull tool** to lower the boat. Type in '10' and press enter.



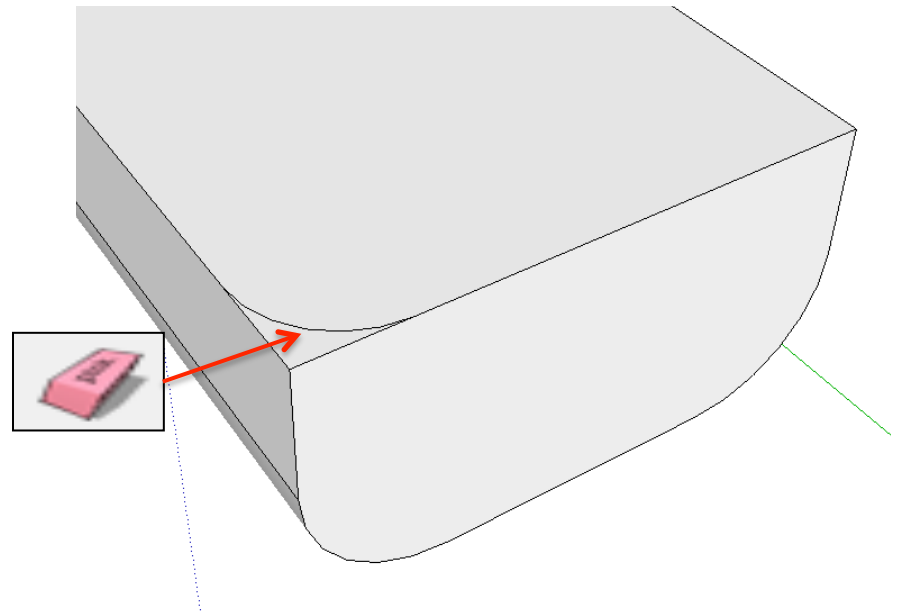
21. Use **the square tool**. Starting in the **bottom left hand corner shown**. Draw a square. Type in '7.5,7.5' and **press enter**.

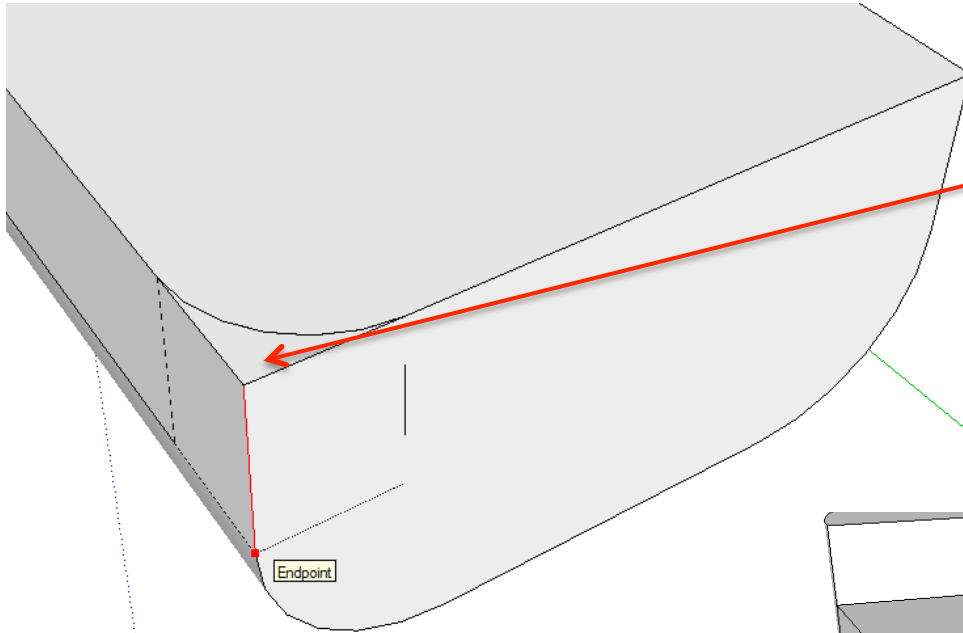




22. Use **the circle tool**. Starting in the **centre of the square**. Draw a circle outwards. The **circumference** of the circle should touch either of the two endpoints shown.

23. Use the **eraser tool** to erase the parts of the circle not needed..

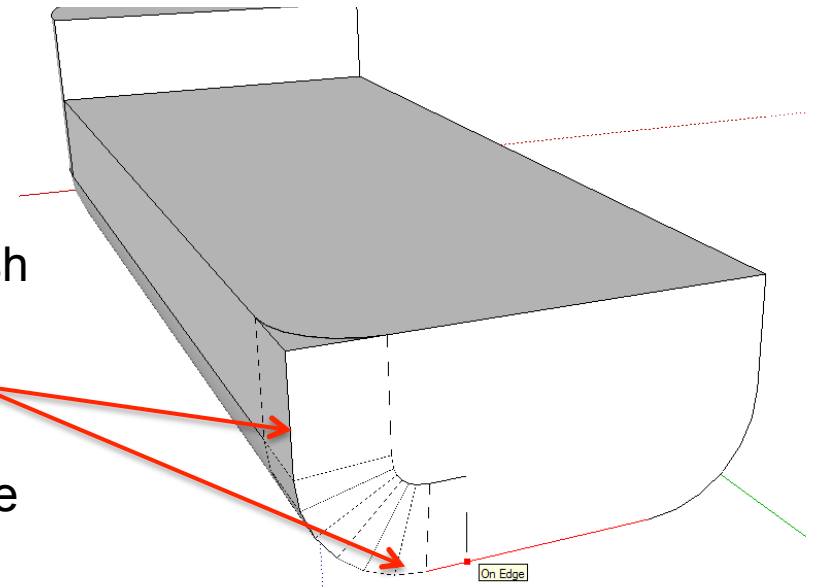




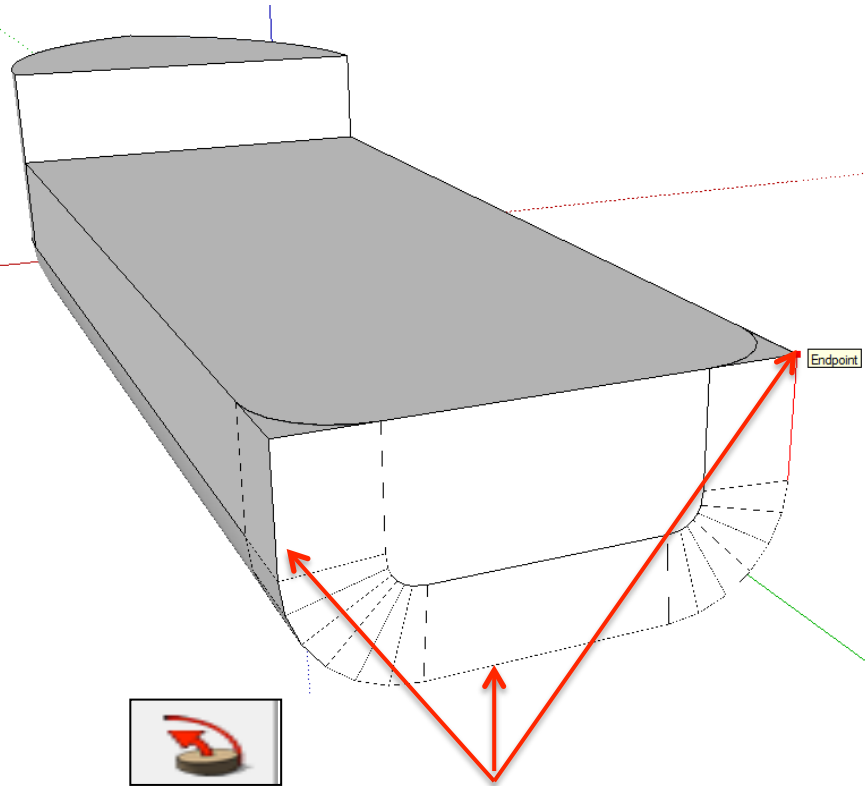
24. Use the **follow me tool**. Click on the corner segment shown.



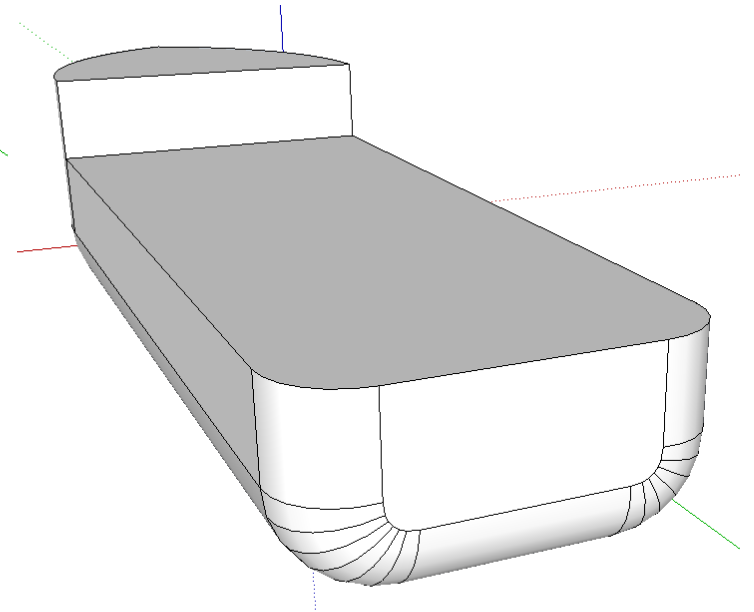
25. Use the **follow me tool**. Push the segment down. Hover over the edge shown to help guide the follow me tool.







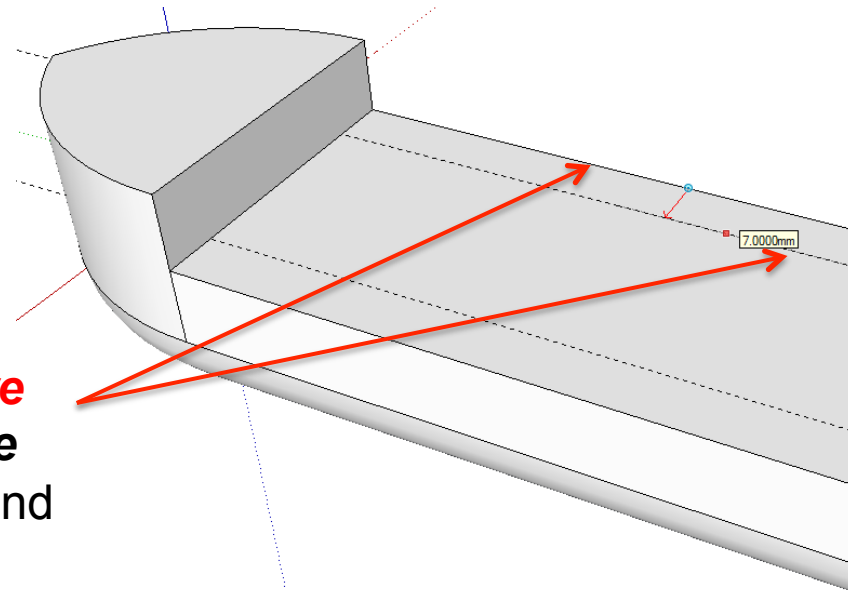
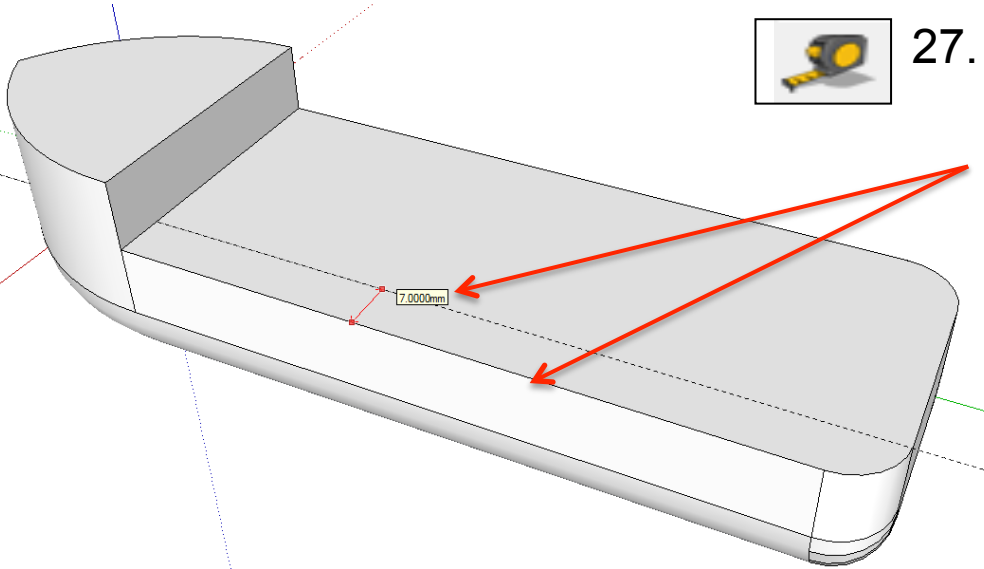
26. Using the ***follow me tool***. Push the segment around to the opposite side and endpoint shown.



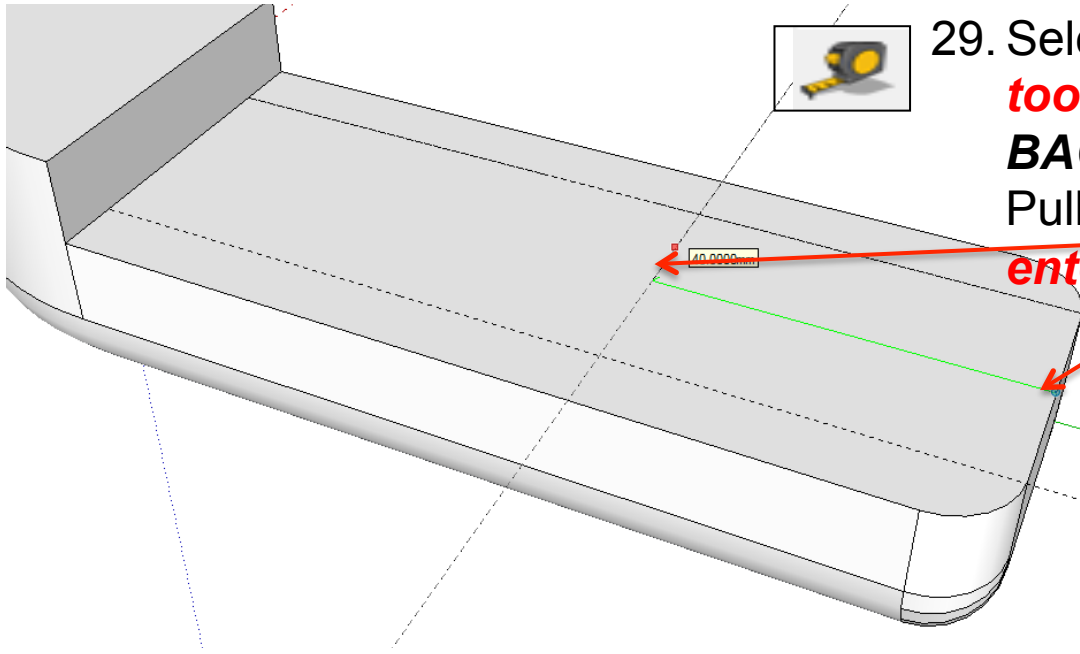
Your boat should now look like this...



27. Select the **Tape measure tool** and snap to the **side edge** as shown. Pull in and **type 7 and enter**



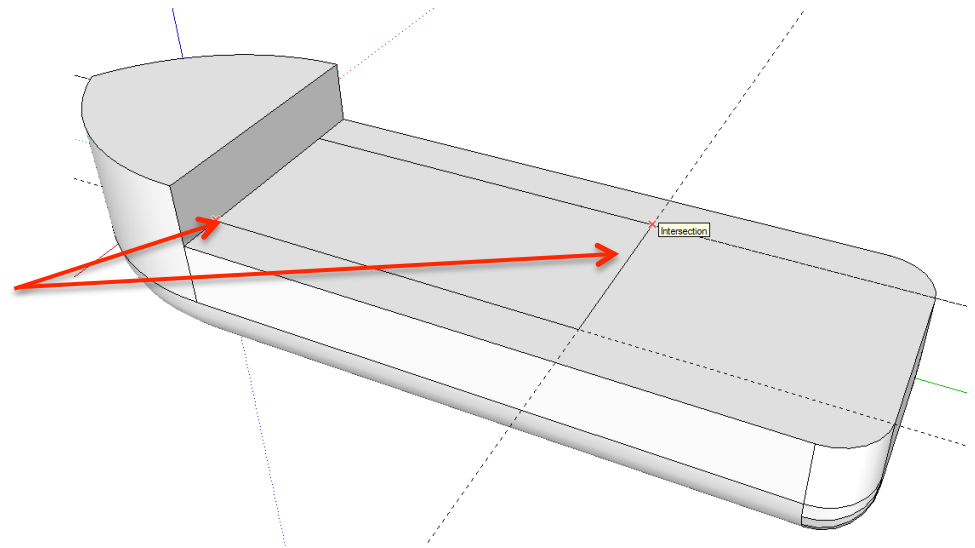
28. Select the **Tape measure tool** and snap to the **side edge** as shown. Pull in and **type 7 and enter**

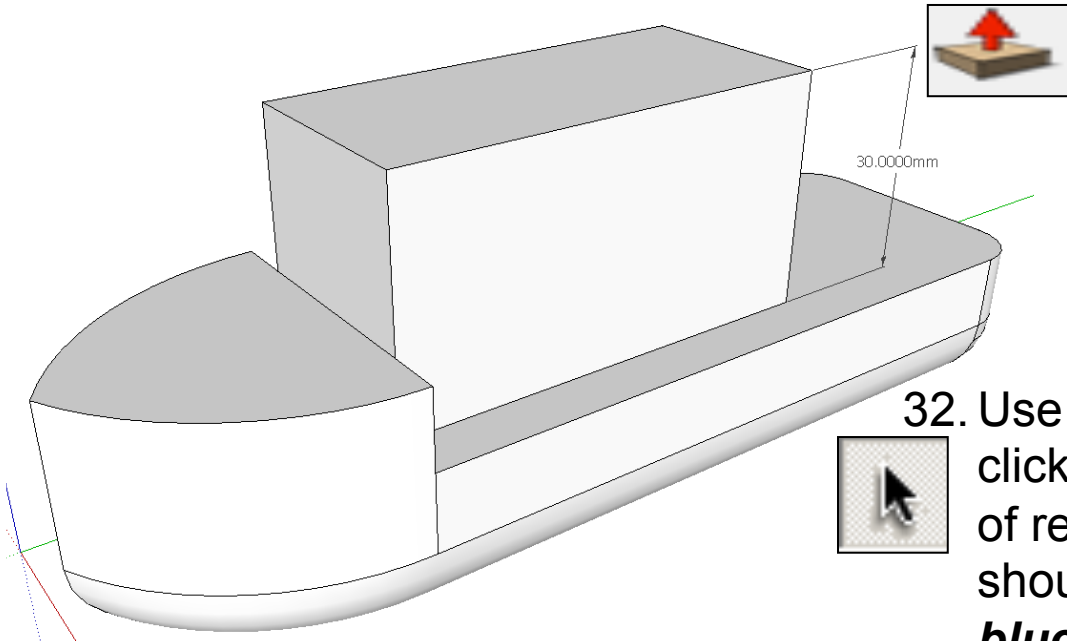


29. Select the **Tape measure tool** and snap to the **BACK edge** as shown. Pull in and **type 40 and enter**



30. Use **the square tool**. Starting in the **TOP left hand corner shown**. Draw a square.





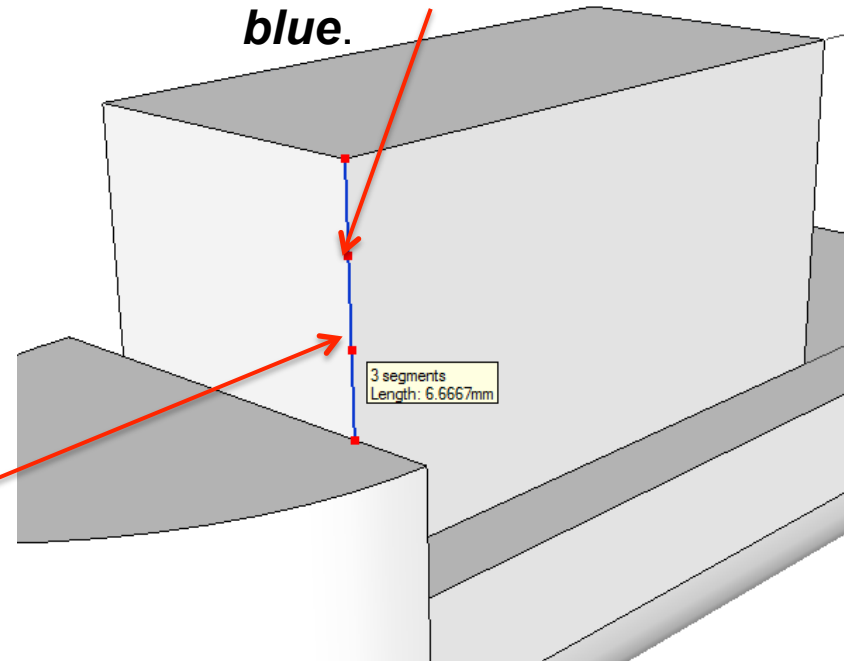
31. Use **the push pull tool** to raise the boat. Type in '30' and press enter.

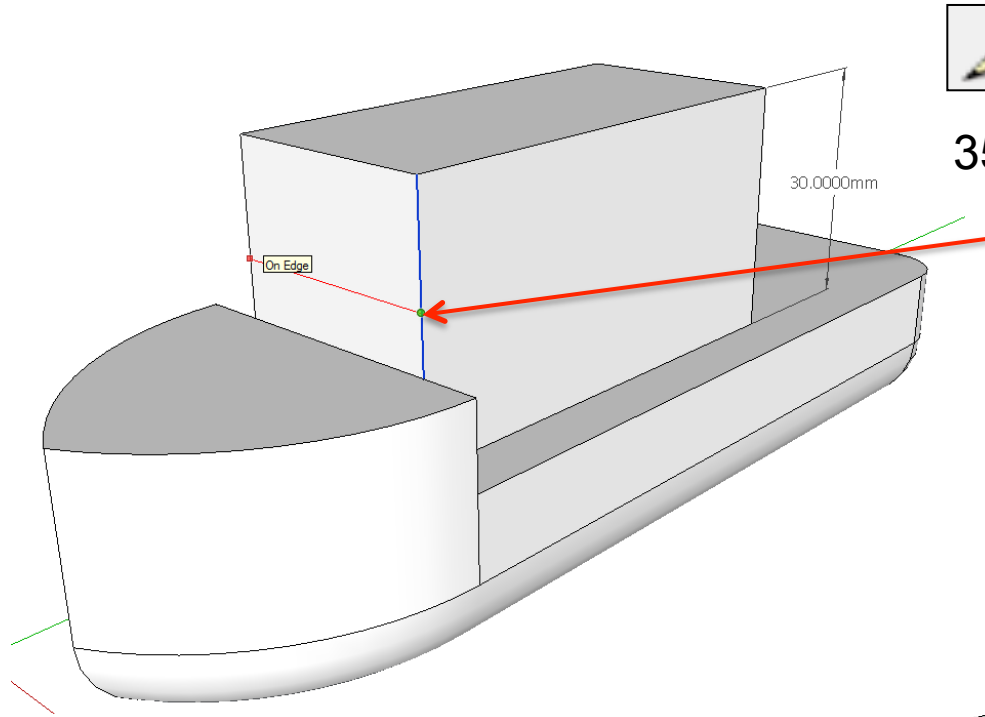
32. Use the Select **tool** and click on the line on the side of rectangle shape. The line should be **highlighted in blue**.



33. **Right click** on the mouse whilst on the **blue line** to produce the menu shown left and **click** on **divide**

34. Using the mouse whilst on the **blue line** move it right or left. You are looking to **divide** it by **3 segments**. You can also type in '3' and **enter**.

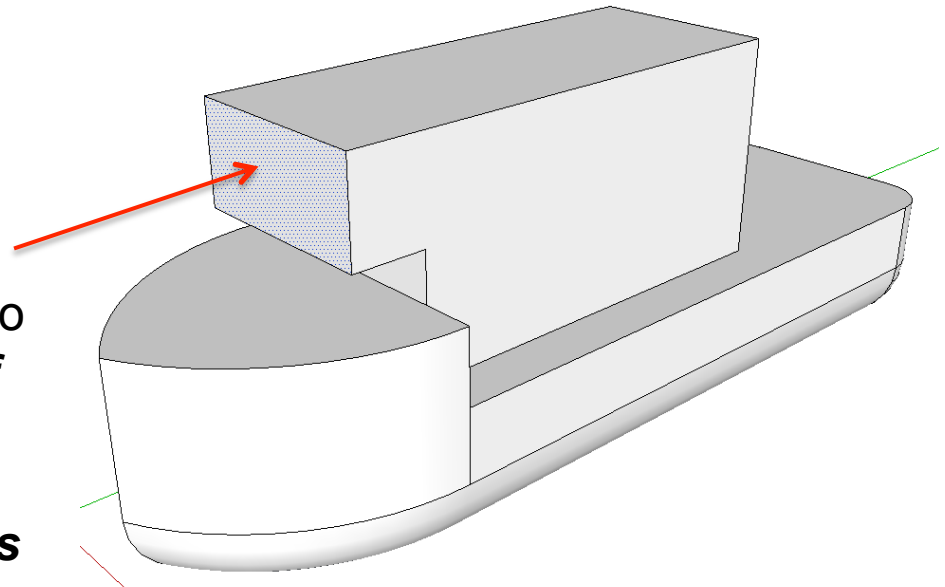


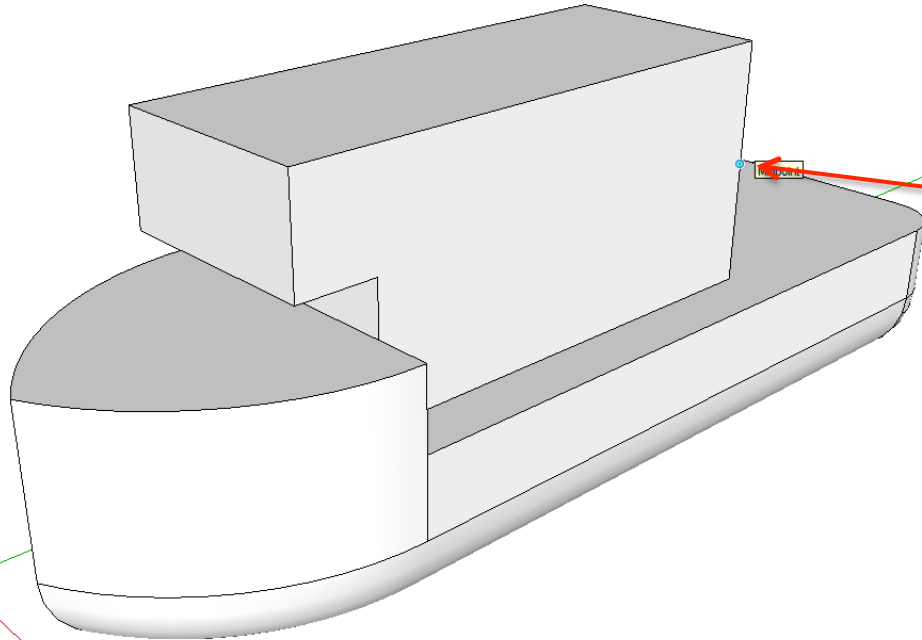


35. Using the **pencil tool**. Draw a line across from **endpoint** to the other as shown



36. Use **the push pull tool** to pull the **top half of the cabin outwards**. Type in **'10'** and **press enter**.

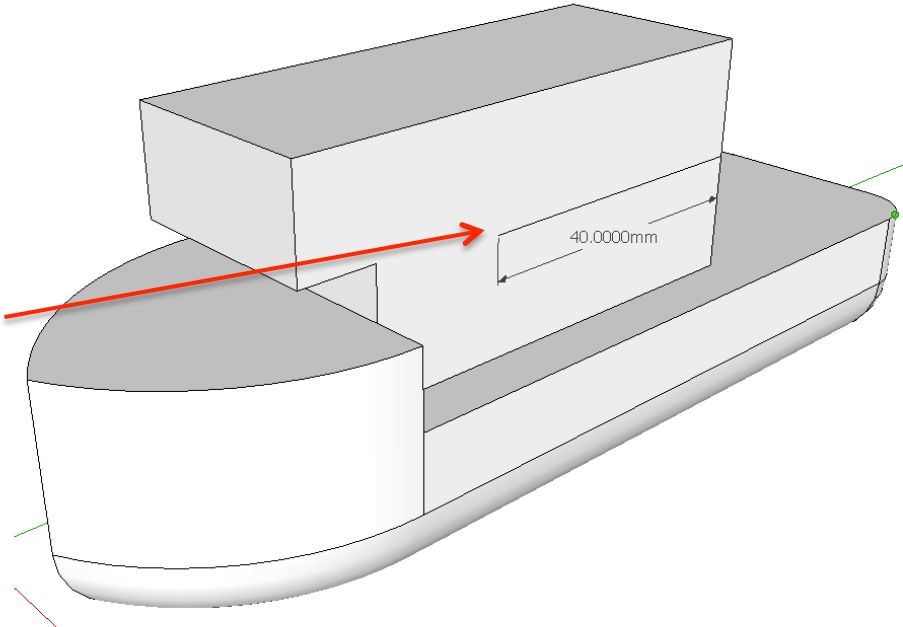


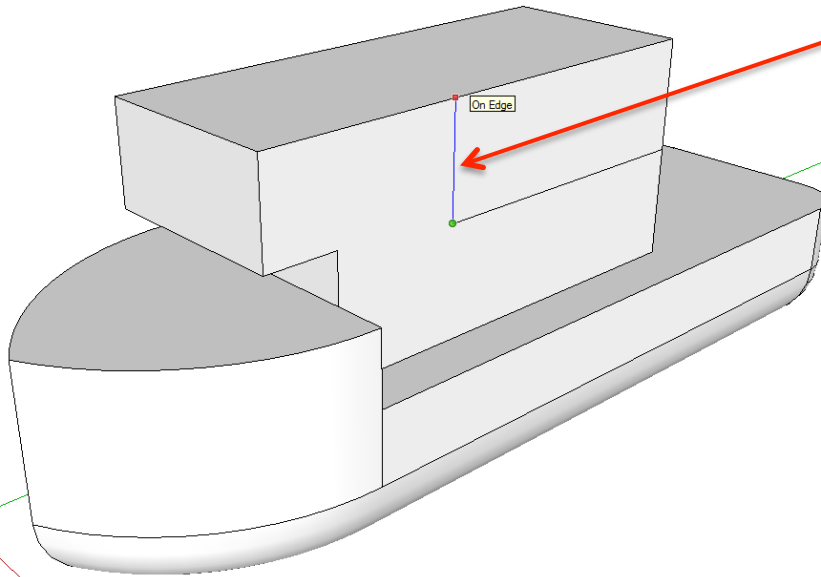


37. Using the **pencil tool**. Snap to the midpoint shown.....



38. Using the **pencil tool**. Draw a line back on either the **red** or **green axis**. Type in '40' and press **enter**.

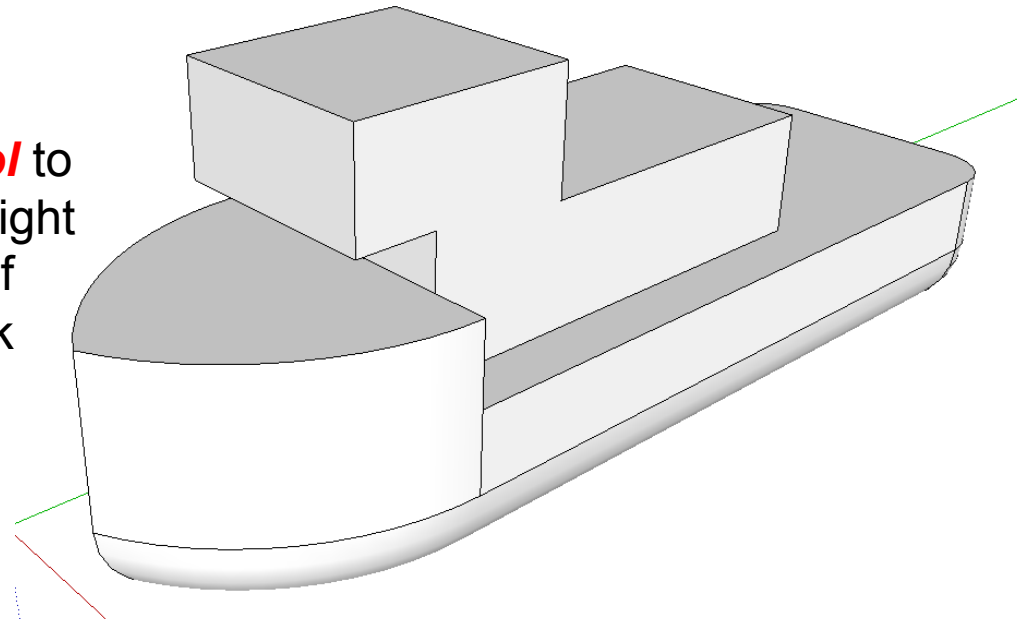


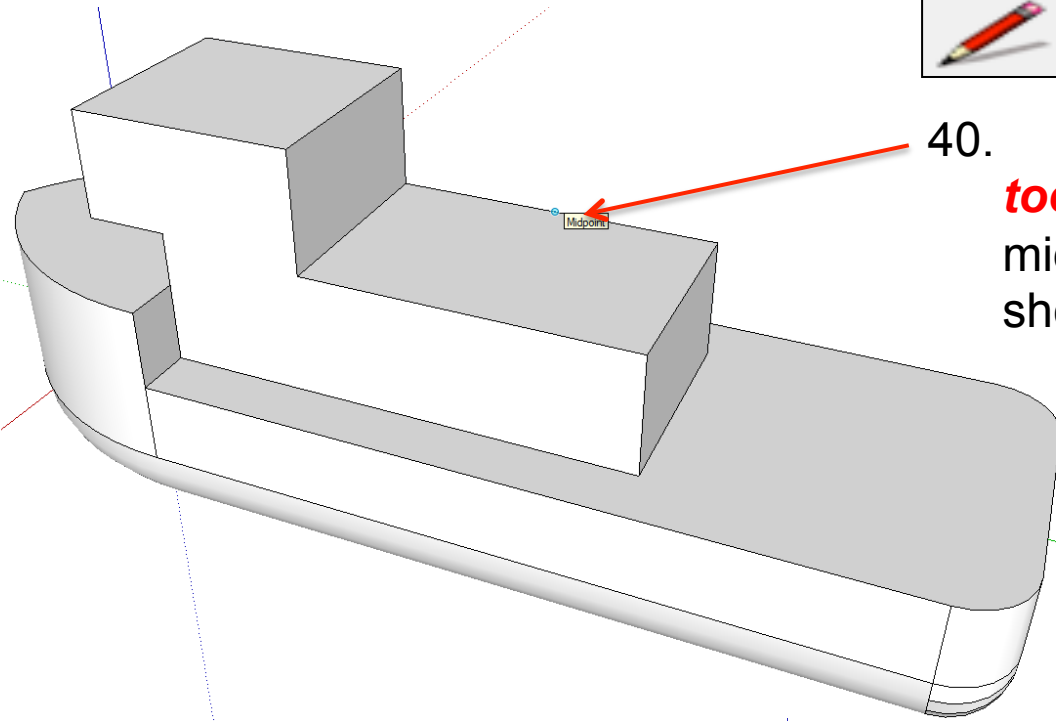


38. Using the **pencil tool**. Draw a line **directly up** from the end of the last line. It should be on the **blue axis**



39. Use **the push pull tool** to push the top right hand corner of the cabin back until it disappears..

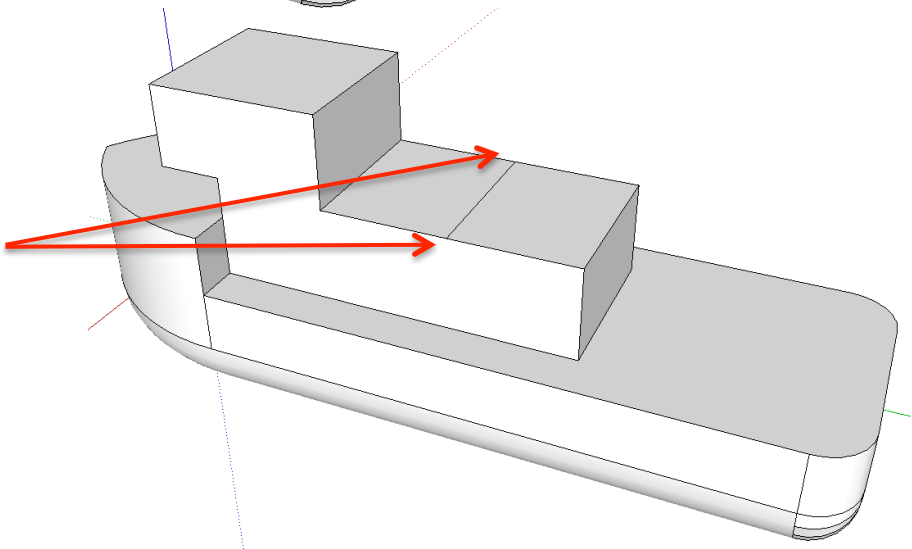




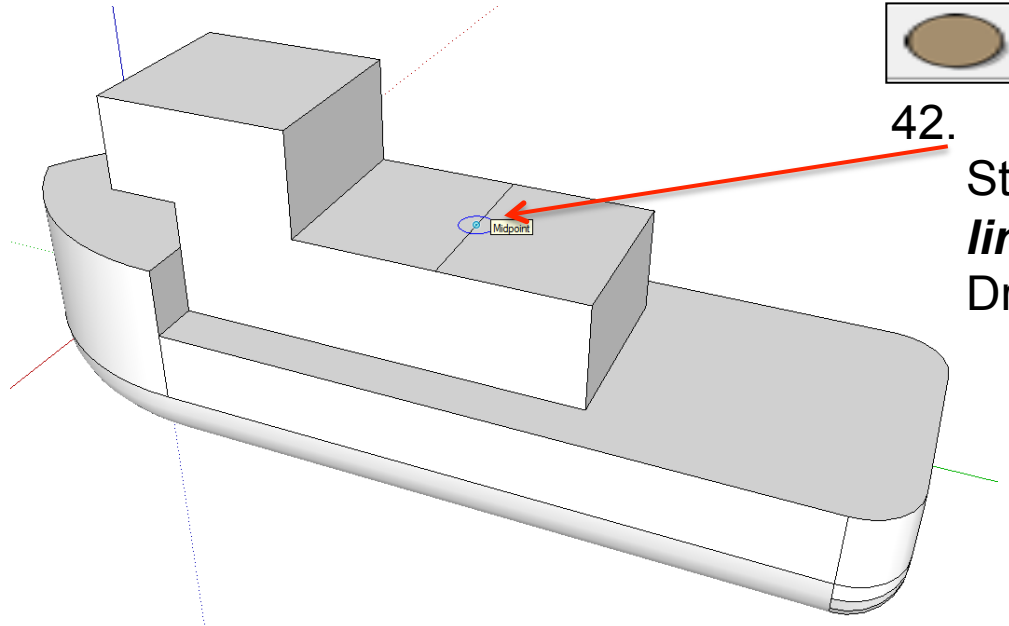
40. Using the **pencil tool**. Snap to the midpoint shown.....



41. Using the **pencil tool**. Draw a line across from **midpoint** to the other as shown



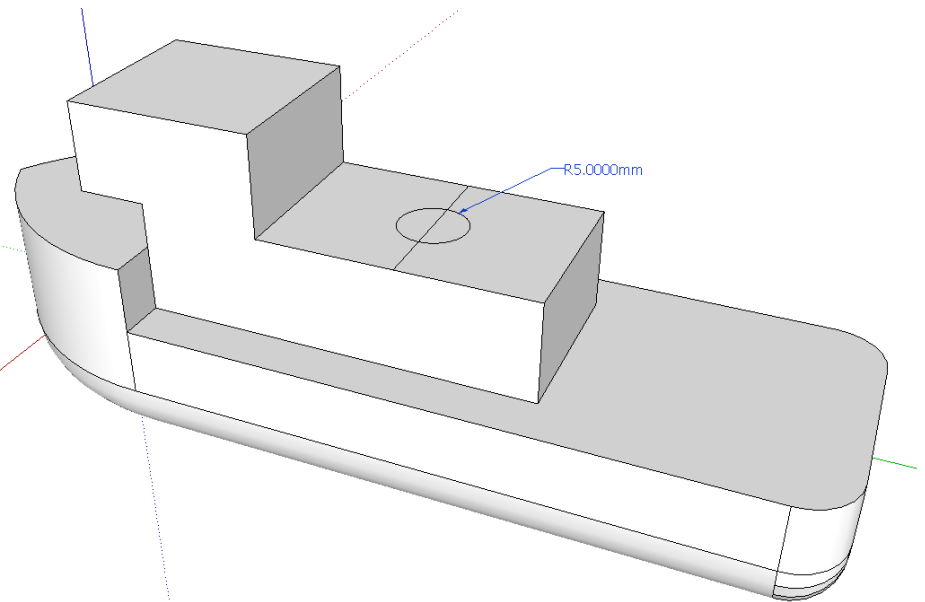


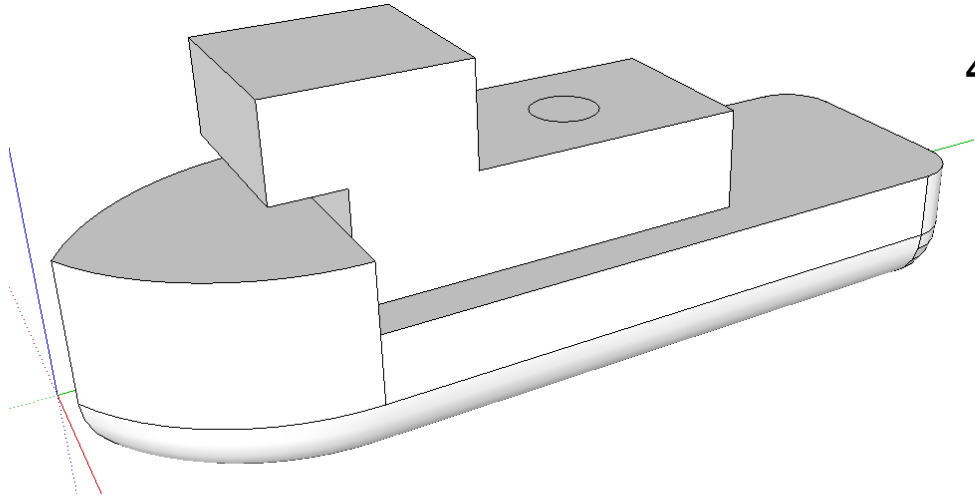


42. Use **the circle tool**. Starting in the **centre of the line you have just drawn**. Draw a circle outwards.



43. Use **the circle tool**. Type in **4.5** and **press enter**.

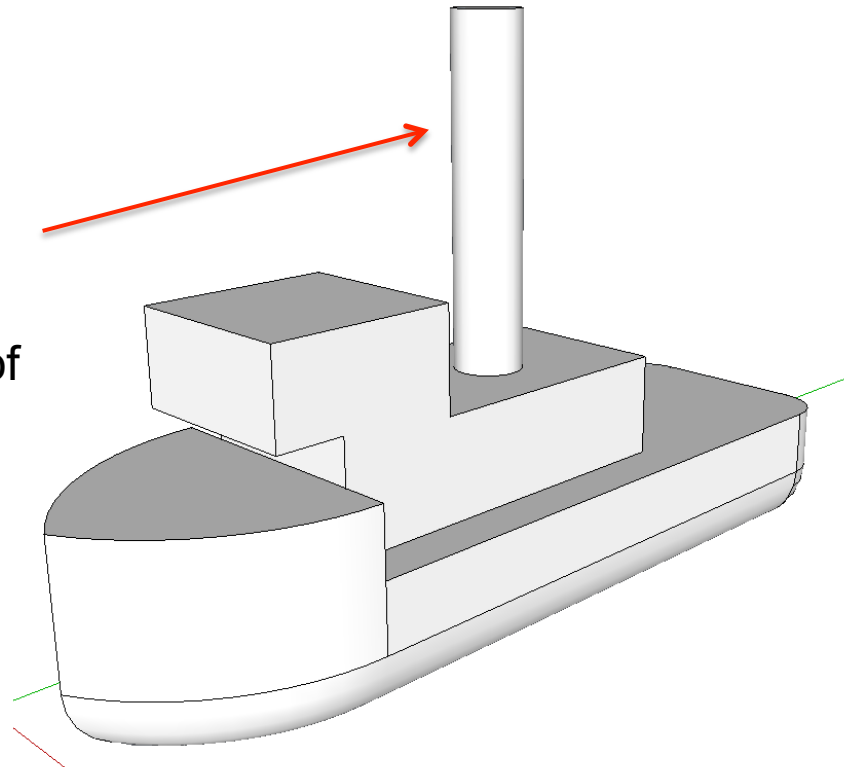


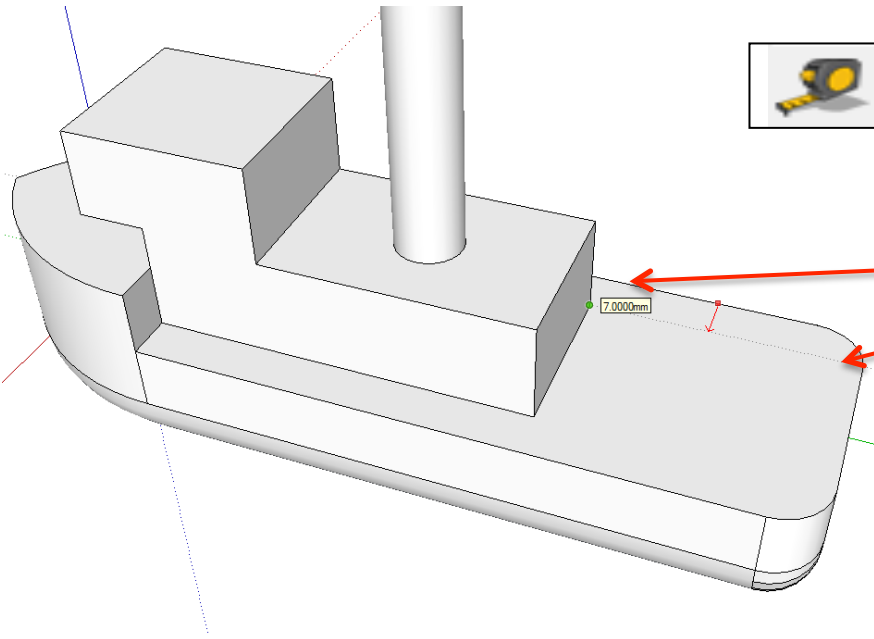


44. Use the **eraser tool** to erase the parts of the circle not needed..



45. Use the **push pull tool** to pull the funnel up to a height of your choice.

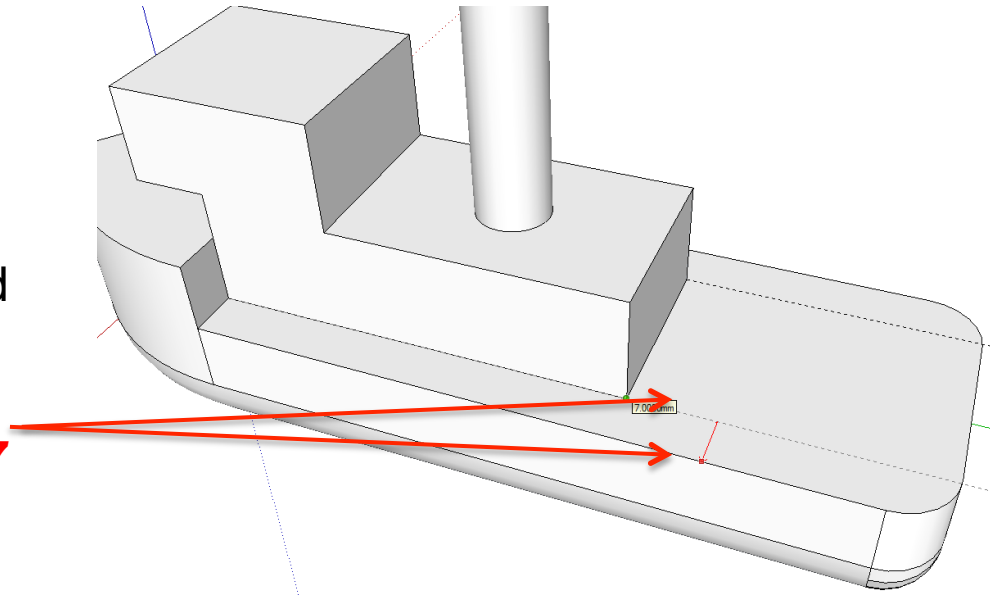


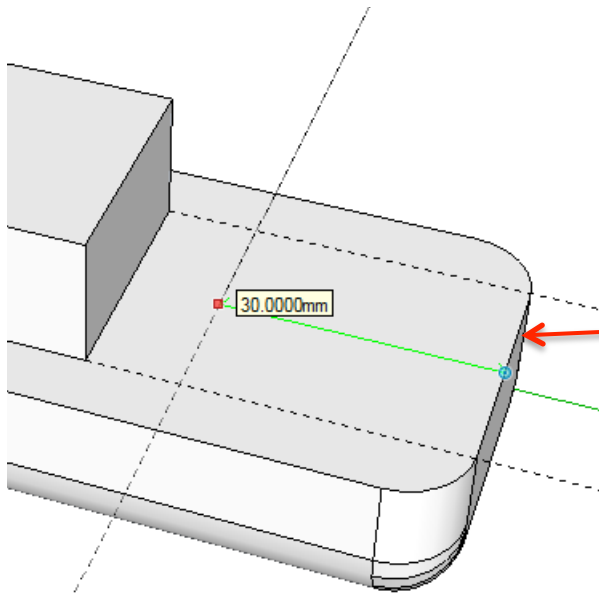


46. Select the **Tape measure tool** and snap to the **SIDE edge** as shown. Pull in and **type 7 and enter**



47. Select the **Tape measure tool** and snap to the **SIDE edge** as shown. Pull in and **type 7 and enter**

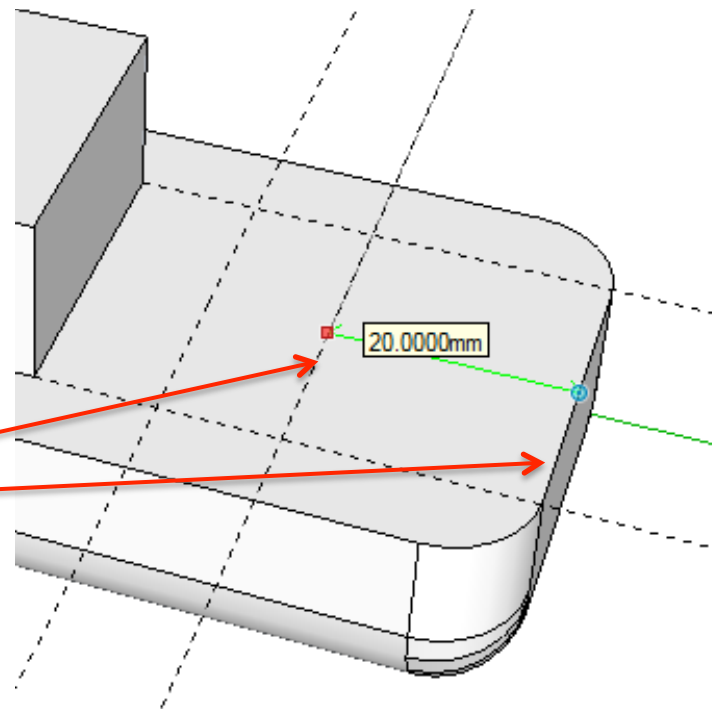


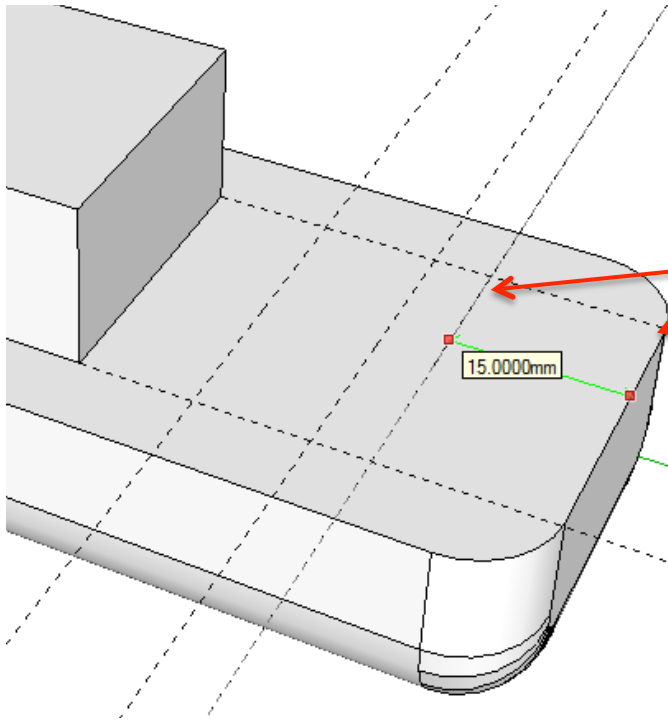


48. Select the ***Tape measure tool*** and snap to the ***BACK edge*** as shown. Pull in and ***type 30 and enter***



49. Select the ***Tape measure tool*** and snap to the ***BACK edge*** as shown. Pull in and ***type 20 and enter***

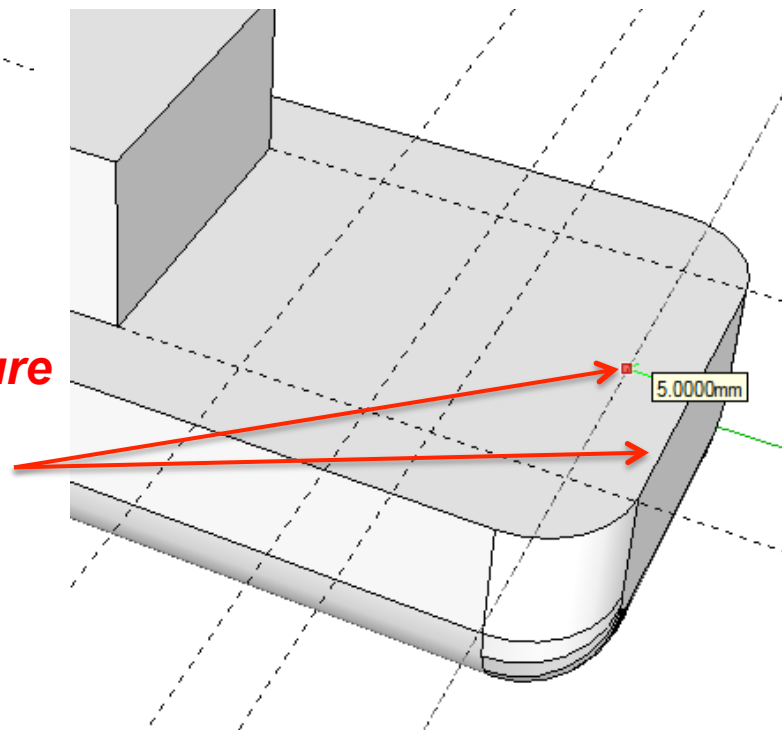


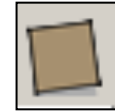
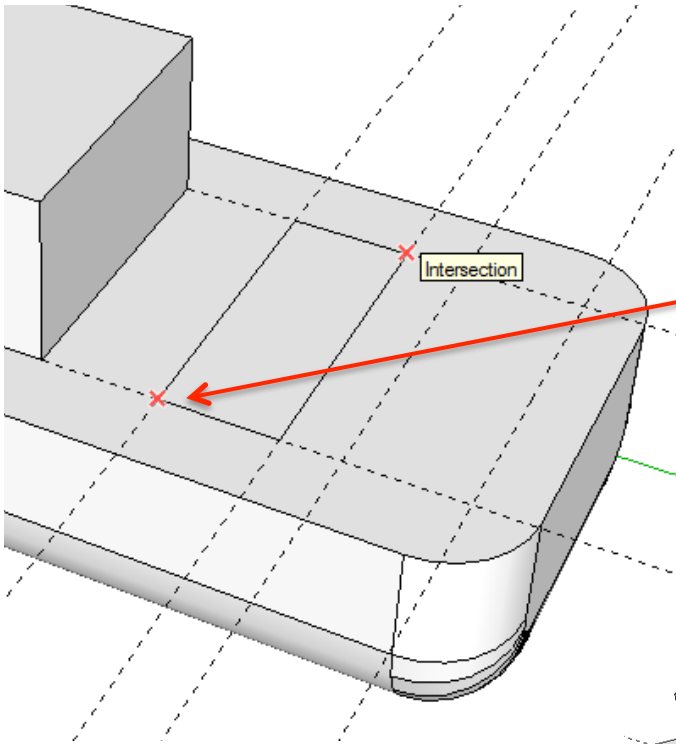


50. Select the **Tape measure tool** and snap to the **BACK edge** as shown. Pull in and **type 15 and enter**

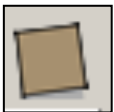


51. Select the **Tape measure tool** and snap to the **BACK edge** as shown. Pull in and **type 5 and enter**

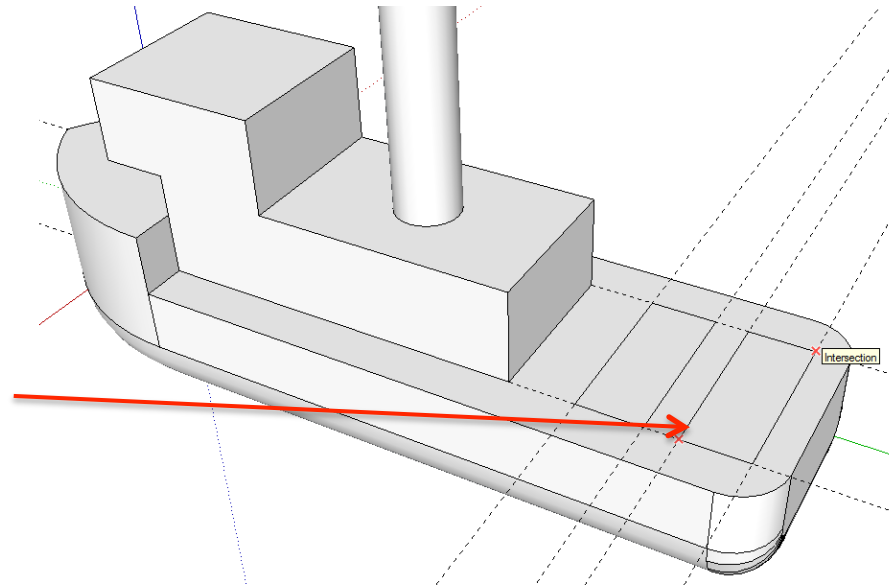


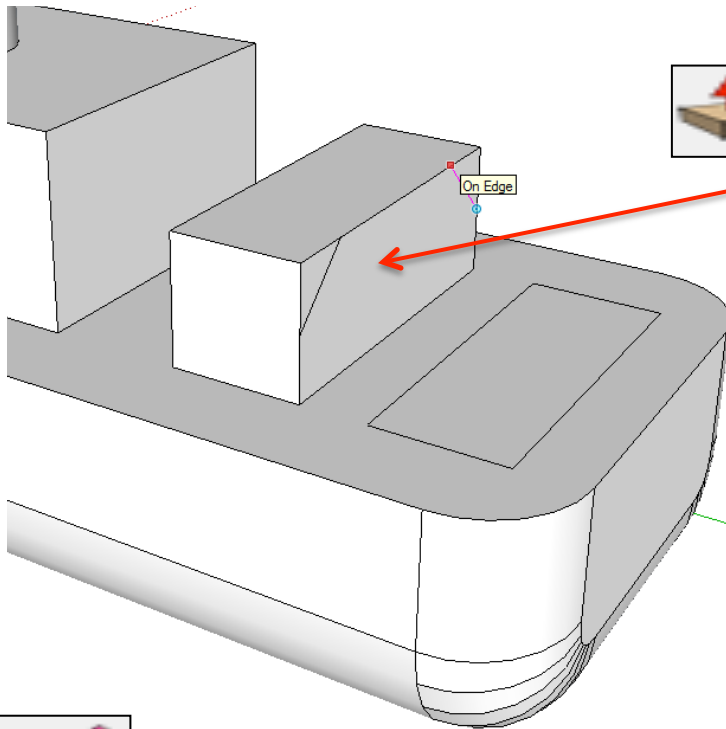


52. Use **the square tool**. Starting in the **TOP left hand corner shown**. Draw a square.



53. Use **the square tool**. Starting in the **TOP left hand corner shown**. Draw a square.

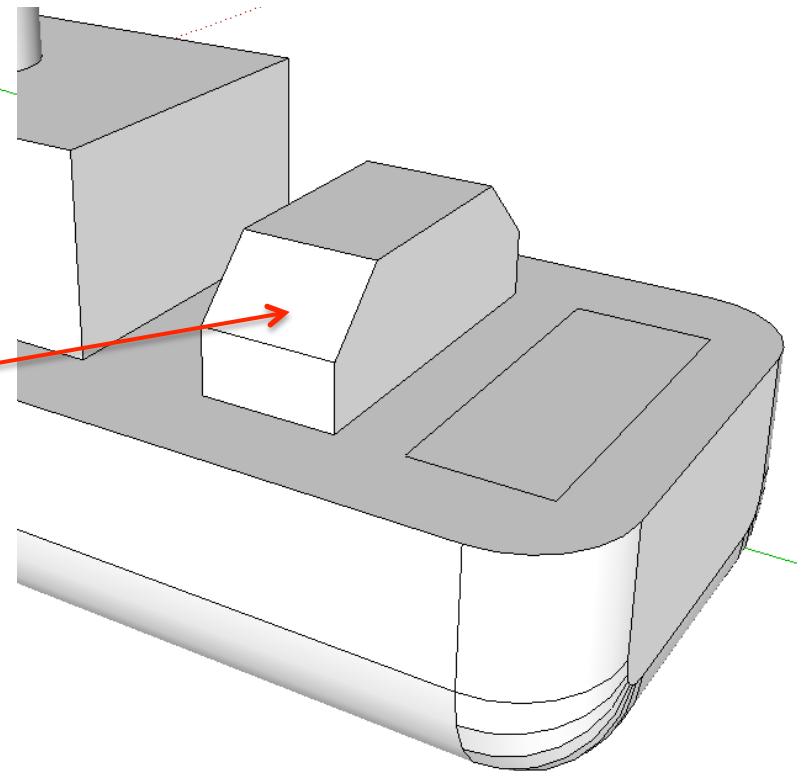


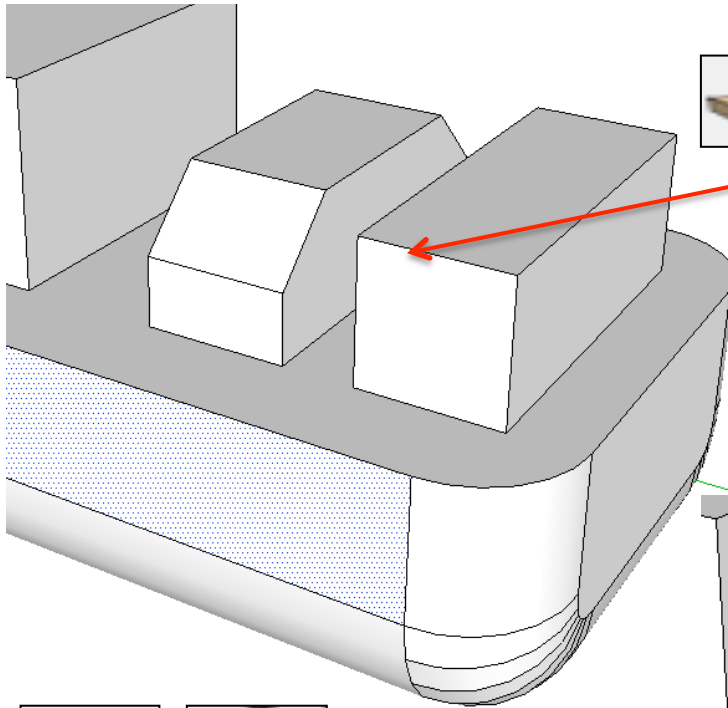


54. Use the **push pull tool** to pull the cabin up to a height of your choice.



55. Use the **pencil tool** to shape the cabin to your own style.

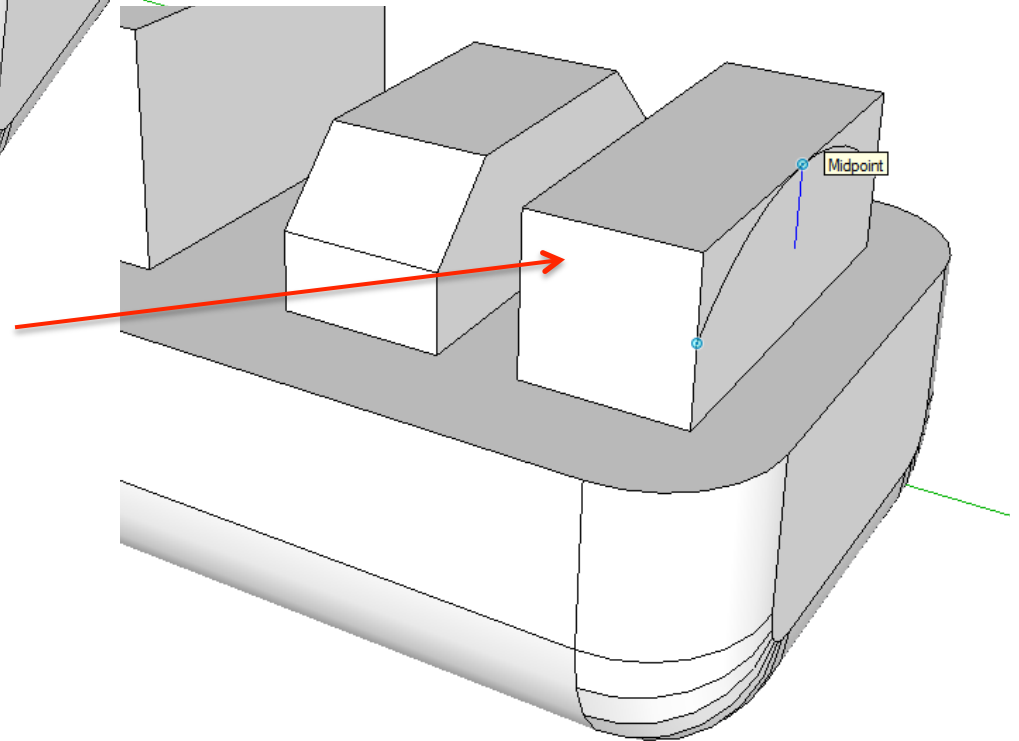




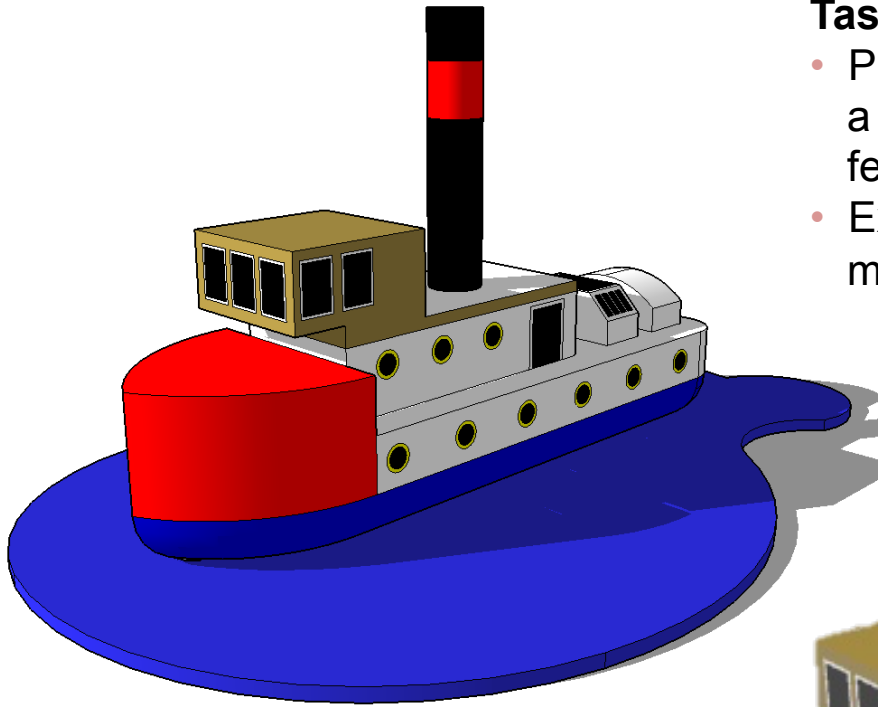
56. Use the **push pull tool** to pull the rear cabin up to a height of your choice.



57. Use the **pencil tool or arch tool** to shape the rear cabin to your own style.

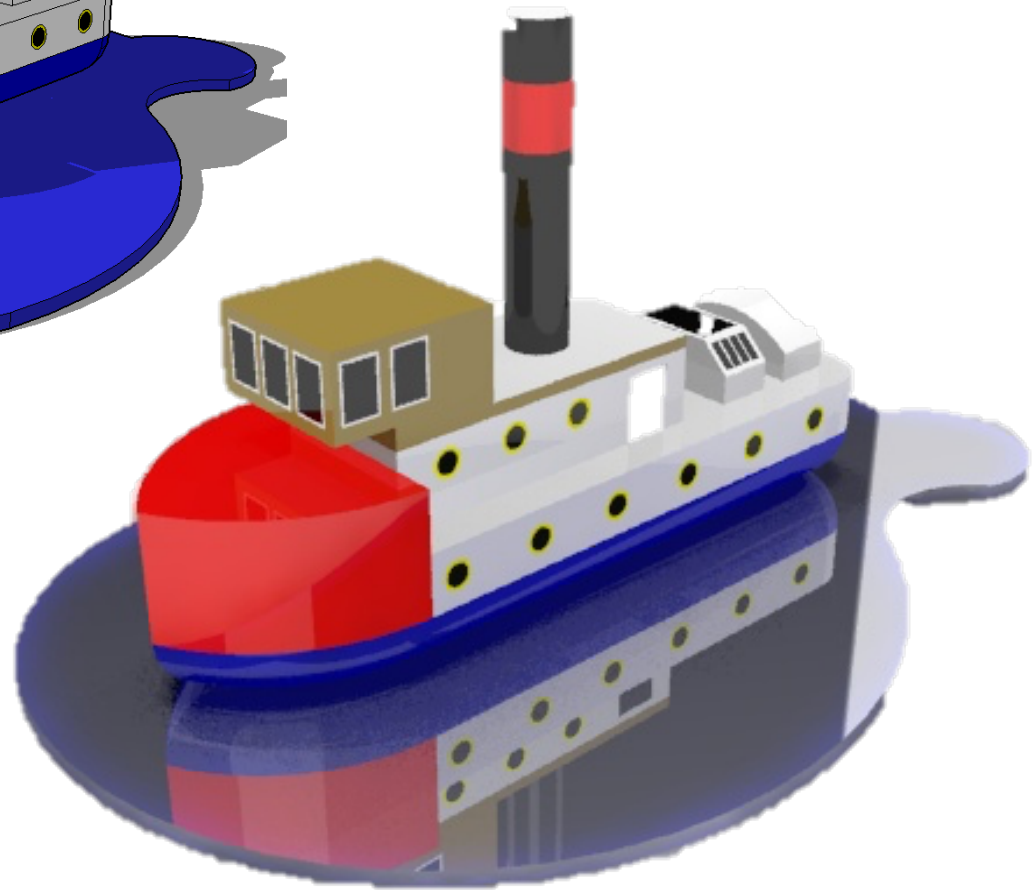






### Tasks:

- Put other details on the ferry such as a windows, portholes and other features, etc.
- Experiment with colours and materials for rendering.



# Extension

- Design a wooden toy for a child.....

