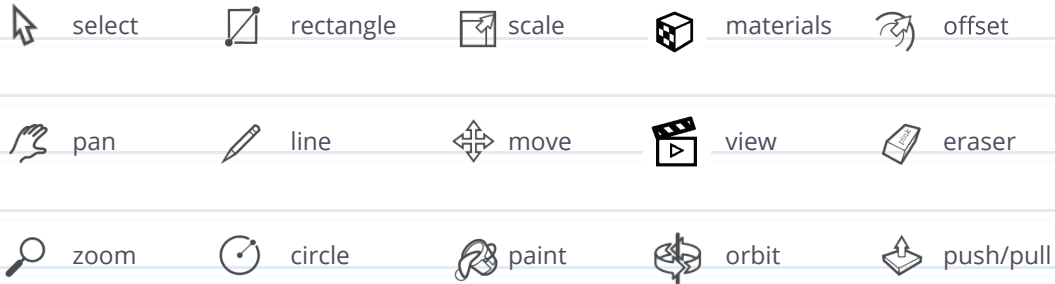


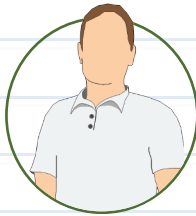
learning objectives

Students will identify, select, and manipulate the following SketchUp tools:



Teacher Preparation

- ✓ Watch and follow along to the Introduction to SketchUp for Schools tutorial, a prerequisite for all SketchUp for Schools curriculum.
- ✓ Make sure each student has their own Google login.
- ✓ Make sure SketchUp for Schools is deployed in your Google School. For more information, visit <https://www.sketchup.com/education/sketchup-for-schools> or speak with your School's administrator.
- ✓ Headphones are needed for the video tutorial that accompanies this lesson.



"Most CAD software is intimidating and takes months if not years to learn, but I have found my students can become skilled in SketchUp in a week."

- Mike Hathorn

Navigation Tools

One of the most important things to learn in 3D modeling is how to move around in your model window. You can click on the orbit tool to expand all the navigation tools in the menu.



Click on the orbit tool , then left click-hold-drag your mouse from side to side. You should see Mike and the box you built rotating back and forth on the screen. If you click-hold-drag-release, then repeat, you will be able to spin around your box.



Click on the pan tool , then click-hold-drag your mouse from side to side. You should see Mike and the box you built moving from side to side on the screen.



Click on the zoom tool , then click-hold-drag your mouse from top to bottom. You should see Mike and the box you built moving closer and farther on the screen.

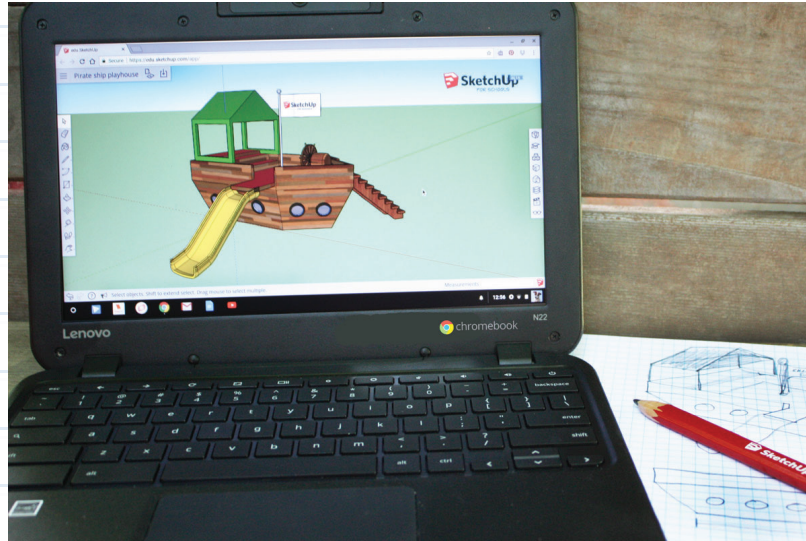


Click on the zoom window tool, then click-drag-release to create a window around Mike and the box you built. Your model will zoom to fit the window you drew.



Click on the zoom extents tools to fit Mike and the box you drew in your model window.

Pirate Ship Playhouse Tutorial




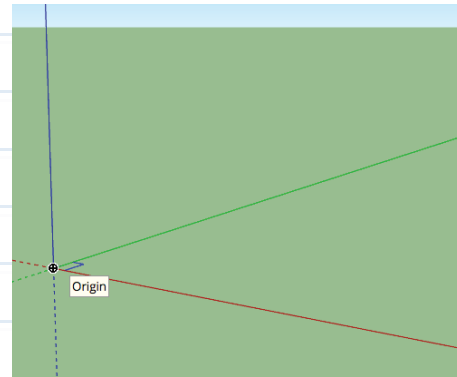
Now that you've gone through the introduction to SketchUp for Schools, you are ready to start modeling your Pirate Ship Playhouse!

Here's a breakdown of the steps required to complete this lesson plan:

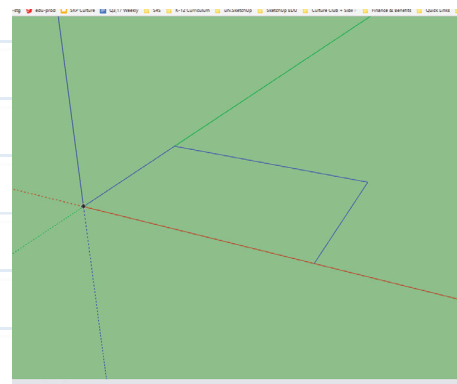
1. Ship Shape
2. The Hull
3. The Deck
4. The Ships Cabin
5. The Portholes
6. Add the Plank
7. Materials and Colors
8. Adding models from the 3D Warehouse

1 Ship Shape


- a. Select the rectangle tool . Bring your rectangle tool to the point where the red, green, and blue lines meet. Each line is called an axis, and the point at which they meet is called the origin. You will know



- b. Click once on the origin, then release and drag your mouse to the right to start your rectangle.




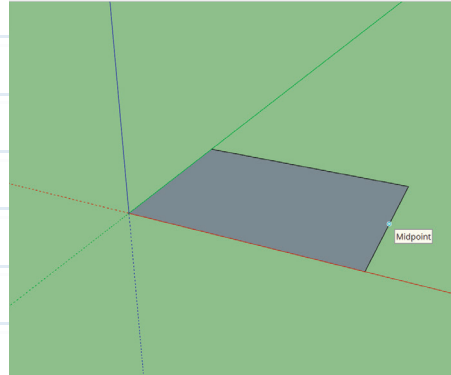
- c. Type 8', 6' then hit enter to complete the rectangle. Note that the dimensions you type will appear in the bottom right-hand corner of your screen


Dimensions 

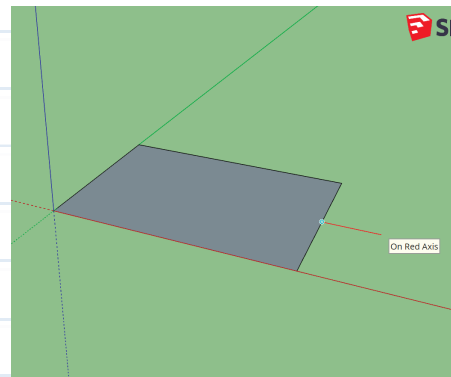
★ Keep going! This lesson continues →

1 Ship Shape

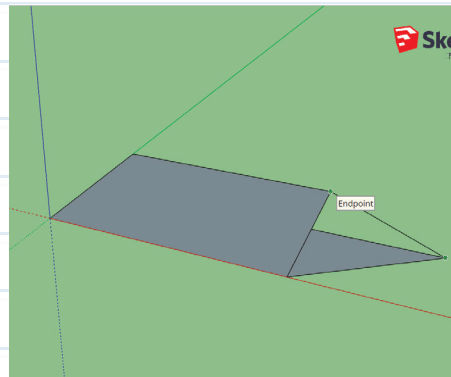
- d. Select line tool  and find the midpoint on the short side of the rectangle. The midpoint is represented by a cyan blue dot and will say "Midpoint" when you hover over it.




- e. Using the offset tool , click once in the middle of the bottom shape and move outside the shape then type "3" and press enter.

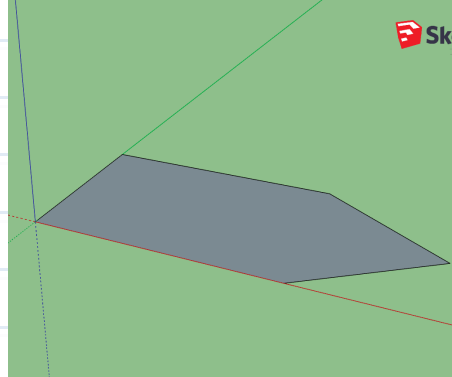



- f. With the line tool still selected, click once on the end of the line you just created. Click a second time on one of the near corners of the rectangle to create a triangle surface. Repeat on the other side.

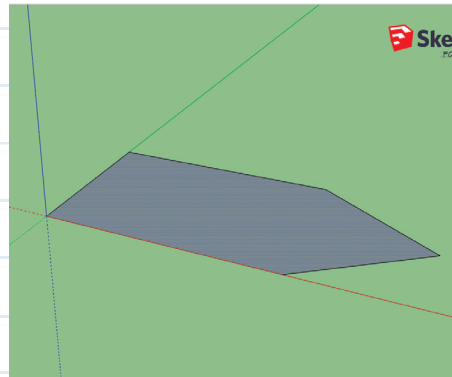


1 Ship Shape

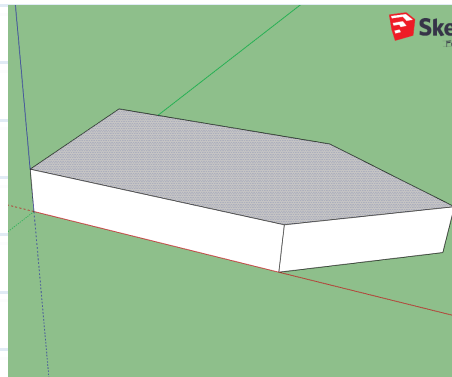
- g. Select the eraser tool  and click on the lines inside the shape to erase them.




- h. Select the push/pull tool  and hold your mouse over the surface so that it is highlighted.

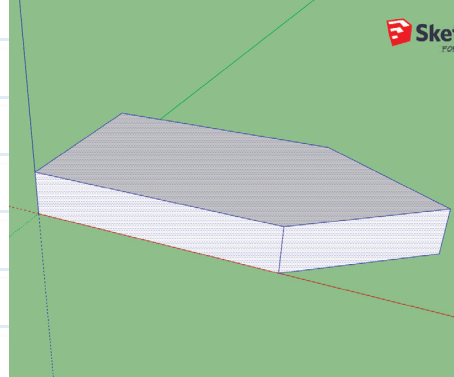


- i. Click once inside the shape and move your mouse up on the screen. Type 1'6" then hit enter.




1 Ship Shape

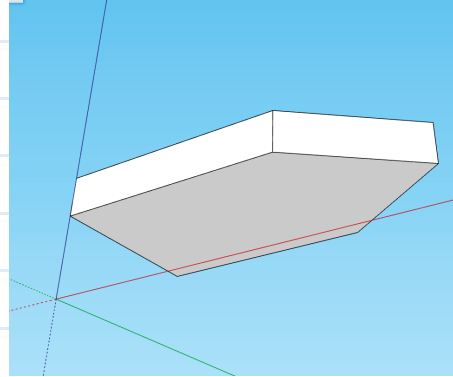
- J** Click on the select icon  and select all surfaces by either triple-clicking on the sandbox model, or dragging a window from the top left of the model to the bottom right.




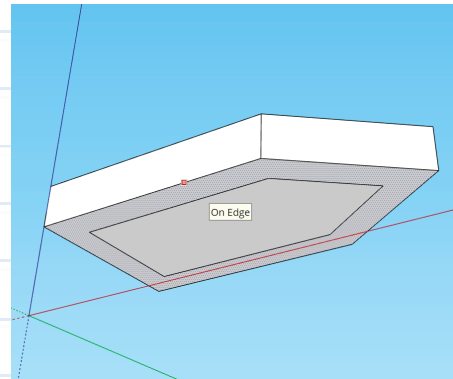
★ You completed this step! Great job! Keep going! →


2 The Hull

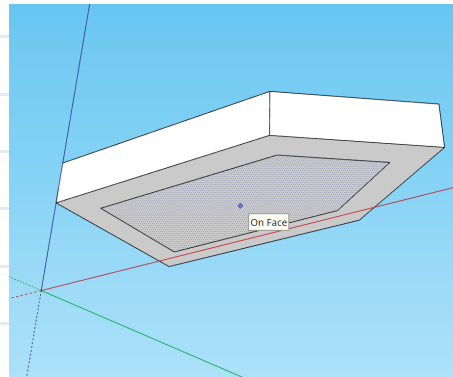
- a. Select the orbit tool  and left click-hold-drag your mouse to view the underside of the shape.



- b. Select the offset tool . The offset tool creates copies of lines at a uniform distance from the original. Click once on any edge of the bottom surface and move your mouse towards the center of the shape. Type 1' then hit enter to complete the offset.

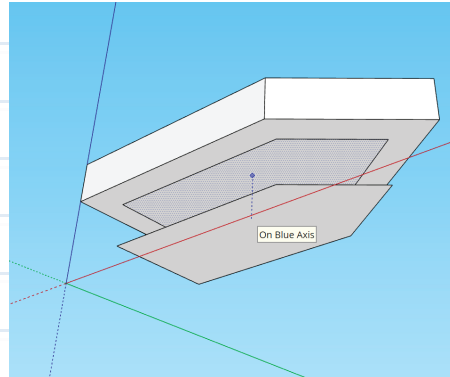


- c. Select the move tool  and hold your mouse over the inset surface so that it is highlighted.

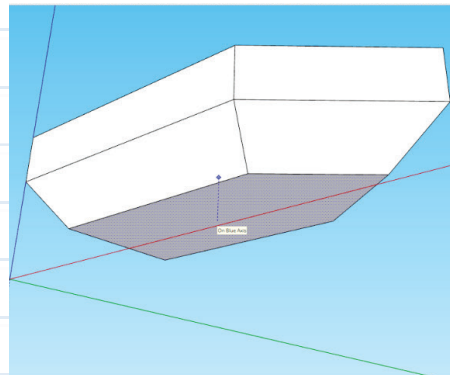


2 The Hull

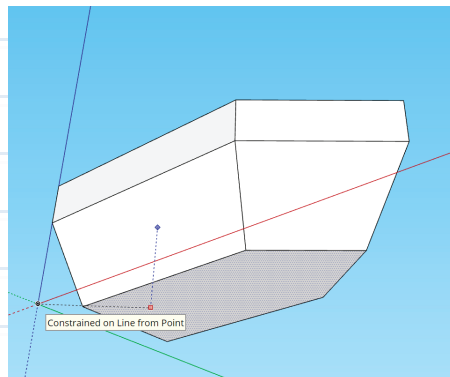
- d. Hit Control (PC) or Command (Mac), then click once to make a copy of the surface. Move your mouse down the screen so that the surface moves along the blue axis. Hold down the shift key to lock to the blue axis.




- e. Click Alt (PC), Option (Mac) once to activate "auto-fold" mode.

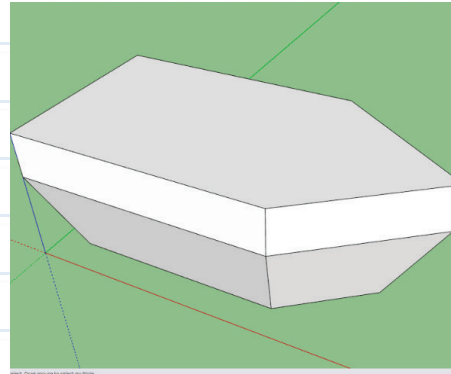



- f. Move your mouse to the origin point. This will inference the origin plane at a height of 0', or -3' from the base of your shape.

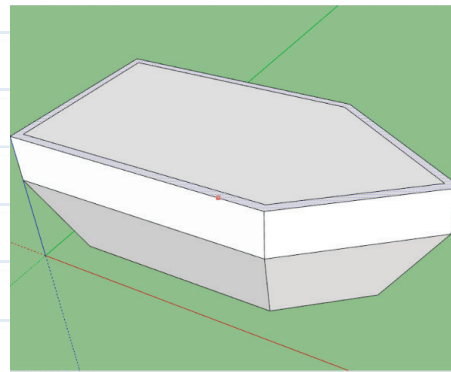



3 The Deck

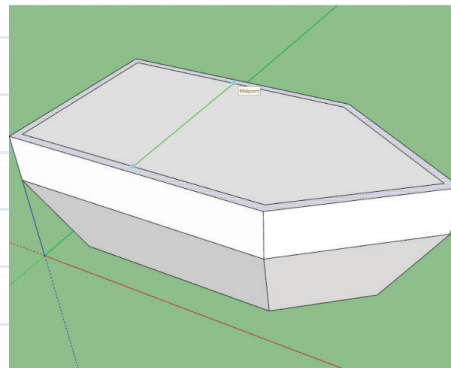
- a. Select the orbit tool  to view the top of your model




- b. Select the offset tool . Click once on any edge of the top surface and move your mouse towards the center of the surface. Type 3" then hit enter to complete the offset.

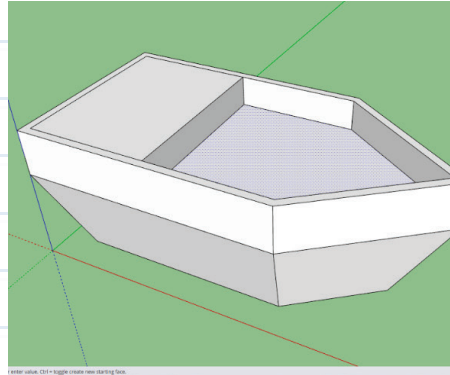


- c. Select the line tool  and draw from midpoint to midpoint of the rectangular part of the ship.




3 The Deck





- d. Select the push/pull tool  and click once in the middle of the pentagon shape. Move your mouse down and type 1', then hit enter.



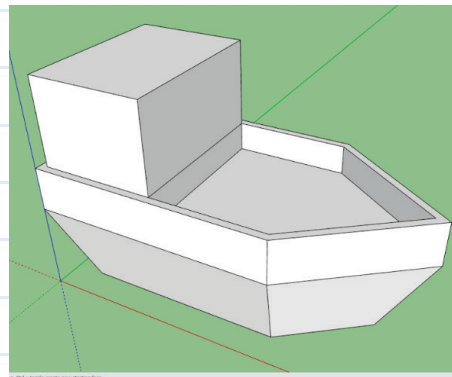
☆ Keep going! Your ship is almost built! →


4 The Ship's Cabin

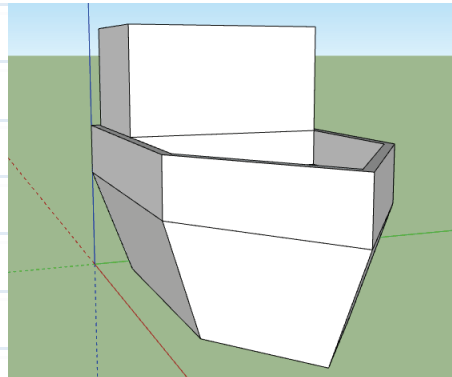
- a. Select the push/pull tool , and click on the rectangular shape. Tap ctrl (PC), alt (Mac) to activate "toggle create new starting face" mode.


    Drag to push or pull face or enter value. Ctrl = toggle create new starting face.

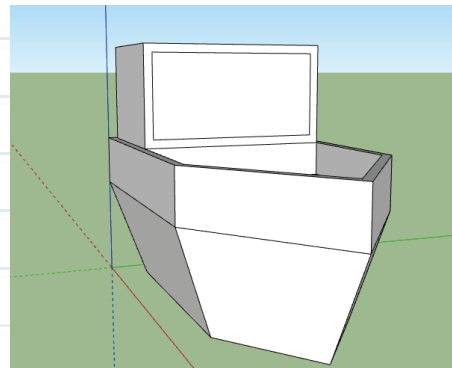
- b. Move your mouse up on the screen, type 3', then hit enter.




- c. Select the orbit tool  to view the front of your model

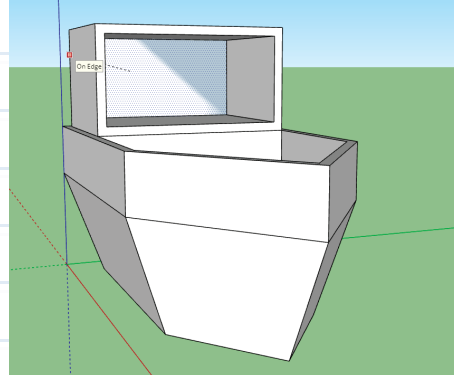



- d. Select the offset tool . Click once on any edge of the front rectangular surface and move your mouse towards the center of the surface. Type 3" then hit enter to complete the offset.

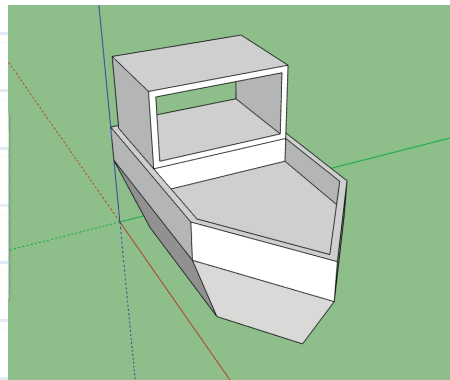



4 The Ship's Cabin

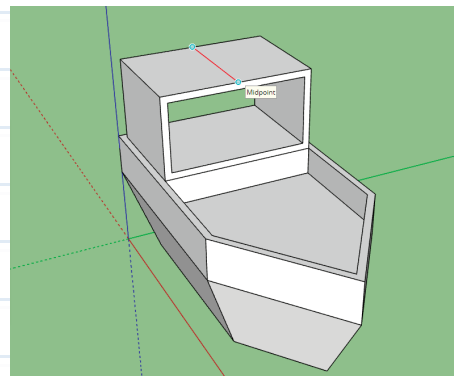
- e. Select the push/pull tool  and click on the new rectangle you made. Move your mouse onto an edge or corner on the back of the rectangular cabin. When you see the words "on edge" or "endpoint" appear, click again. This will hollow out the cabin.



- f. Select the orbit tool  to view the top of your model




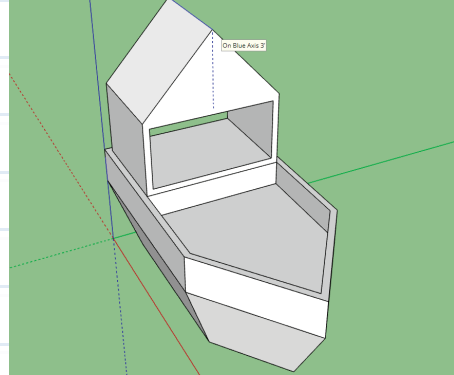
- g. Select the line tool  and draw from midpoint to midpoint on the top-most surface




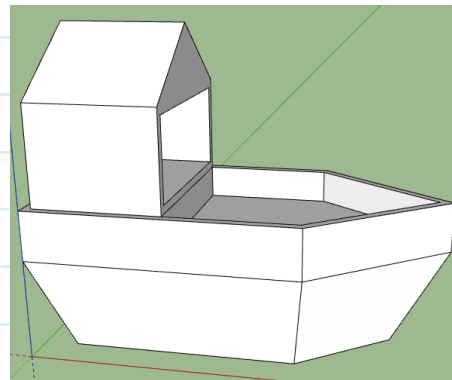
✧ Keep going! This lesson continues →


4 The Ship's Cabin

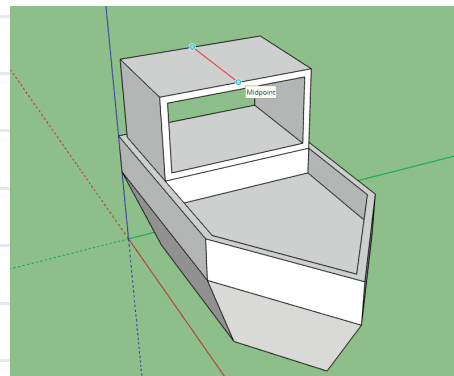
- h. Select the move tool  and click once on the line you just drew. Move your mouse up on the screen so that it is on the blue axis. Type 3' then hit enter to raise the edge up to create the roof.



- i. Select the orbit tool  to view the side of your model.



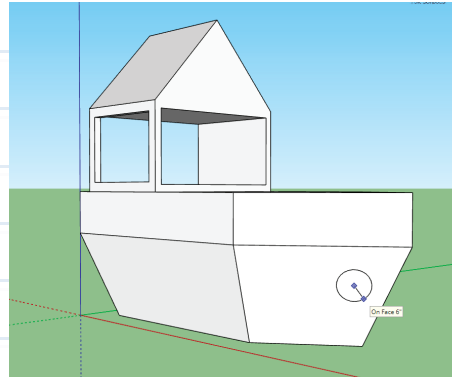
- j. Select the offset tool . Click once on any edge of the square and move your mouse towards the center of the surface. Type 4" then hit enter to complete the offset.



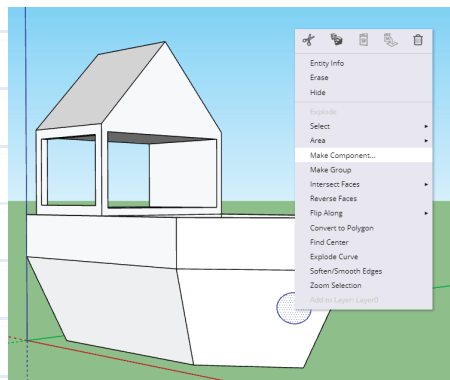
★ Keep going! This lesson continues →

5 The portholes

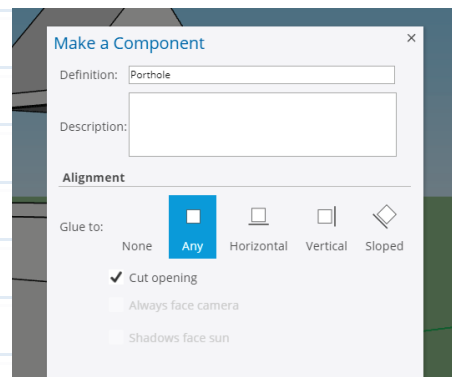
- a. Select the circle tool and click on the front surface of your ship. Type 6" then hit enter, to create a circle with a 6" radius.



- b. Click the select tool , then double click inside the circle to highlight it. Right click and select *Make Component*.




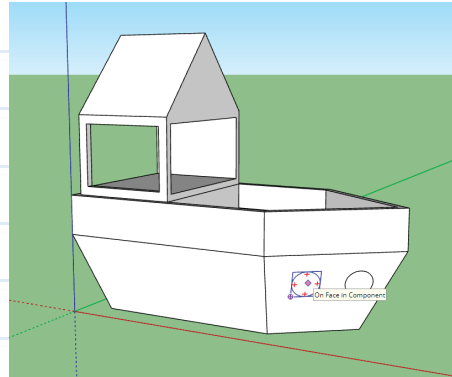
- c. Name the component **porthole**. Make "cut opening" is selected.



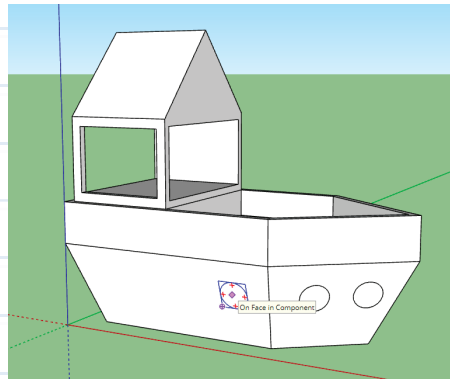
★ Keep going! This lesson continues →

5 The portholes

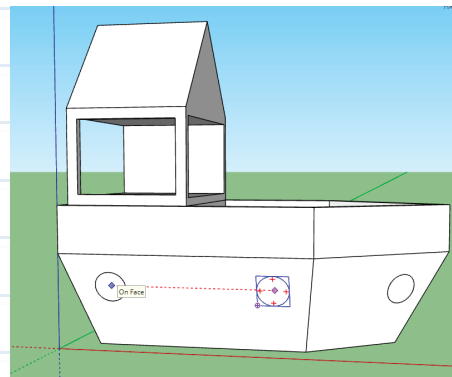
- d. Select the move tool  and tap ctrl (PC) or alt/opt (Mac/Chromebook) to activate the copy tool (the + symbol indicates you are in copy mode). Click once in the center of the circle, then click to the left of the circle to place the copy.



- e. Tap ctrl (PC) or alt/opt (Mac/Chromebook) again to reactivate the copy tool and make another porthole on the long surface of the ship.

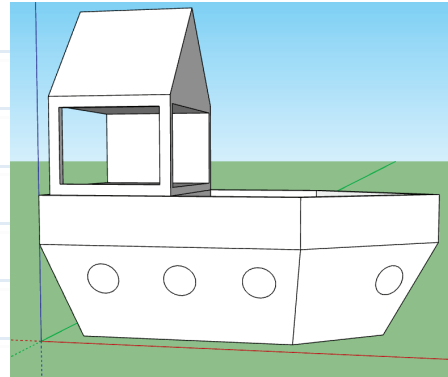


- f. Once more, tap ctrl (PC) or alt/opt (Mac/Chromebook) and move your mouse towards the back of the ship along the red axis.

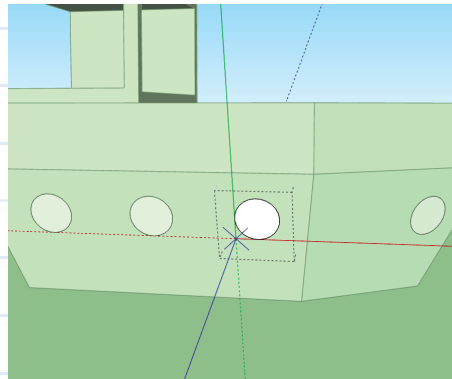



5 The portholes

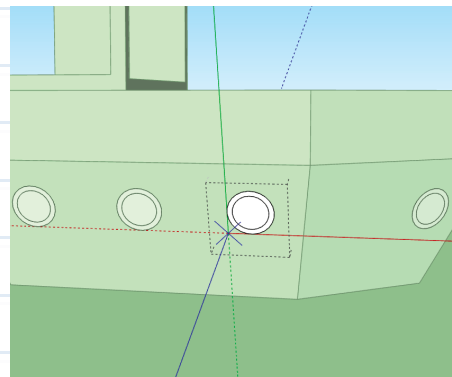
- g. Hold down shift to lock movement to the red axis, then click near the back of the ship to place the porthole copy. Without clicking anything else, type “/2” to make two copies equally spaced apart.




- h. Click the select tool, then double click on the any porthole to edit the component.

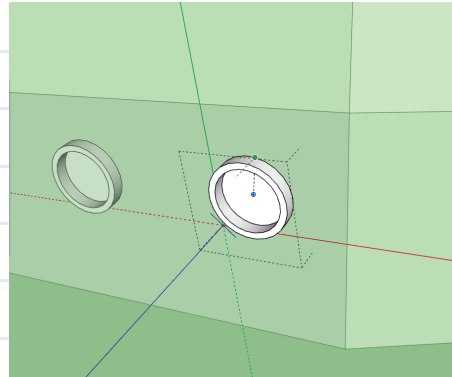


- i. Select the offset tool . Click once on the edge of the circle and move your mouse towards its center. Type “1” then hit enter to complete the offset. Note: because the porthole is a component, any edits you make in one porthole will apply to all of them.

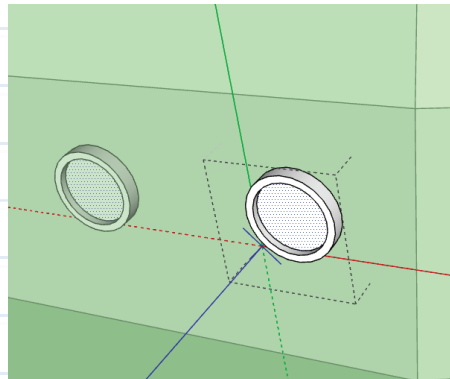


5 The portholes

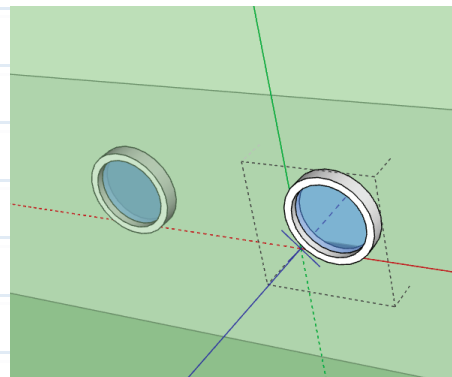
- J. Select the push/pull tool  and click on the outer ring you just made. Move your mouse away from the ship, type 2", then click enter to complete the command.



- K. Select the push/pull again to pull the inner circle out 1".

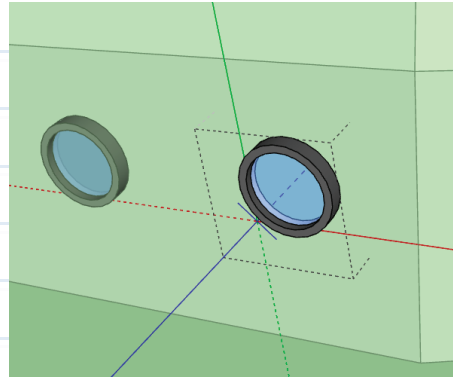


- L. Select the paint bucket tool. In the Materials Panel on the right, select *Glass and Mirrors* and then select a glass option from the list. Click the inner circle to apply the glass "paint" to the component.

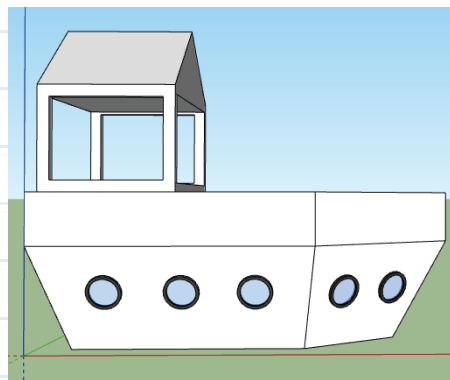


5 The portholes

- m.** Pick another *Color* and paint the rim of the porthole by clicking on each surface.

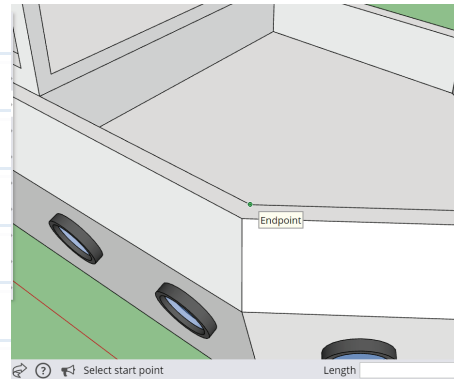


- n.** Zoom out and click Esc, or, click anywhere outside of the component to leave edit component mode.

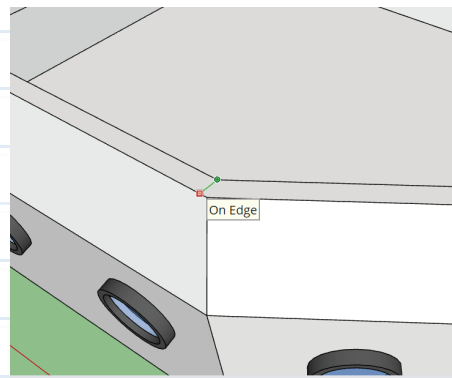


6 Add the plank

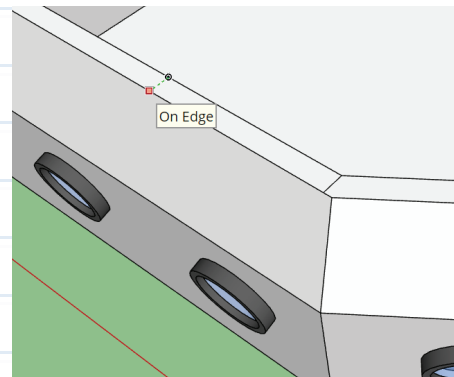
- a. Select the line tool and click on the corner of the deck pictured below.




- b. Move your mouse along the green axis to the opposite edge of the ship's wall and click when you see "On Edge."

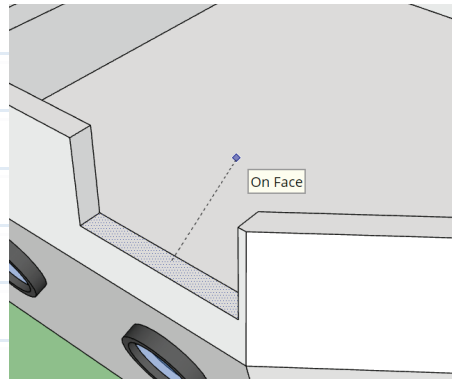


- c. With the line tool still selected, click the midpoint of the inner edge of your ship and draw a line across to the opposite edge. Click again when the words "On Edge" appear on the screen.

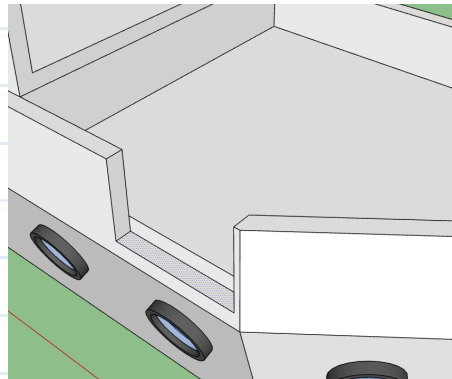


6 Add the plank

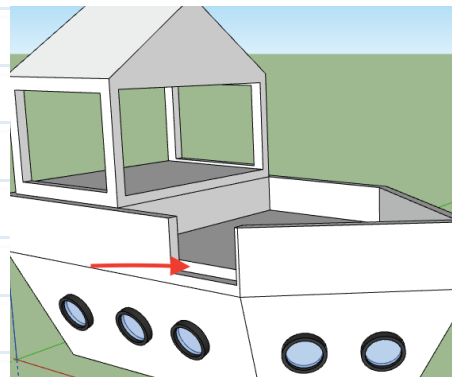
- d. Select the push/pull tool  and click once in between the two lines you just drew. Move your mouse so that you are hovering over the floor of the ship's deck and click again when you see "On Face." Now the surface is pushed down to the level of the ship's deck.



- e. With the push/pull tool still selected, click again on the same face and move your mouse down on the screen. Type "3" and then hit enter.

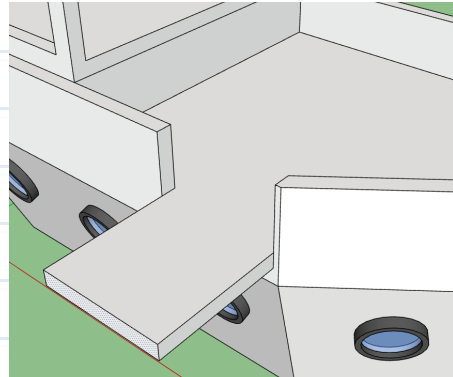


- f. Still using the push/pull tool, click on the surface we point to in the image below. Move your mouse away from the boat, type "3" then hit enter.

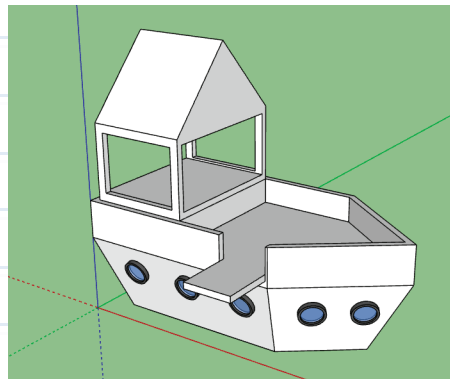


6 Add the plank


9. Click on the surface again and this time type 2', then hit enter.

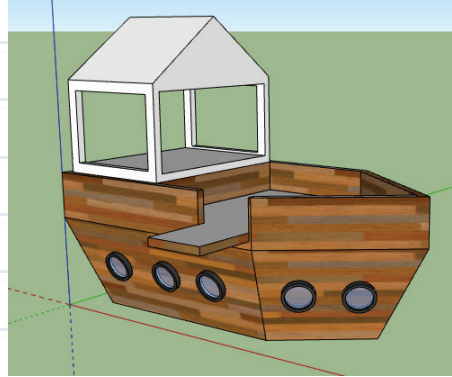


★ That's it! You're done with your plank!

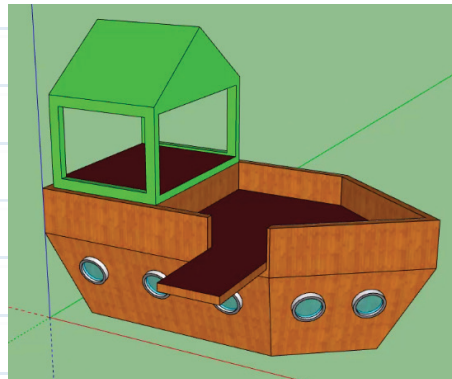


7 Materials and Colors

- a. Select the paint bucket  and choose Wood in the materials panel. Select a wood paneling then click on each face of the ship. Orbit to make sure you are applying the materials to all faces.



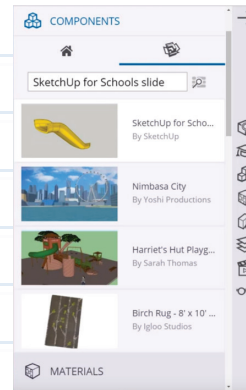
- b. With the paint bucket tool still selected, pick another color to paint the floors and cabin of your ship.



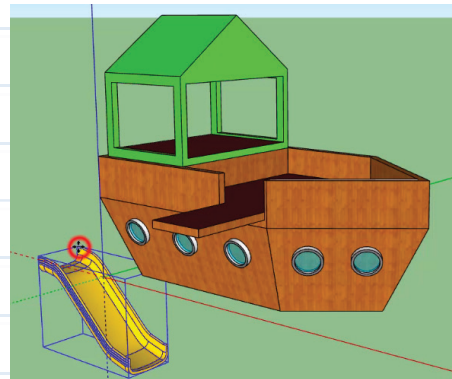
★ Great work! You finished this lesson!

7 Adding models from the 3D Warehouse

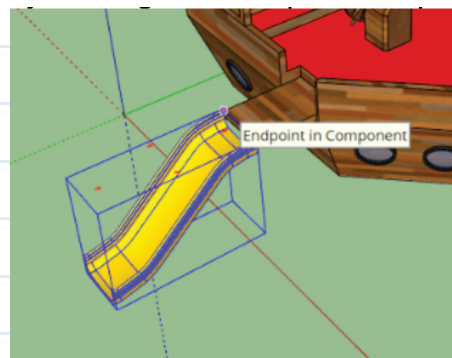
- a. Click on components in the SketchUp Panels on the right. Where it says "Search 3D Warehouse", type in "SketchUp for Schools slide."



- b. Click once on the yellow SketchUp for Schools slide (by SketchUp), then click again anywhere in the model to insert the slide.

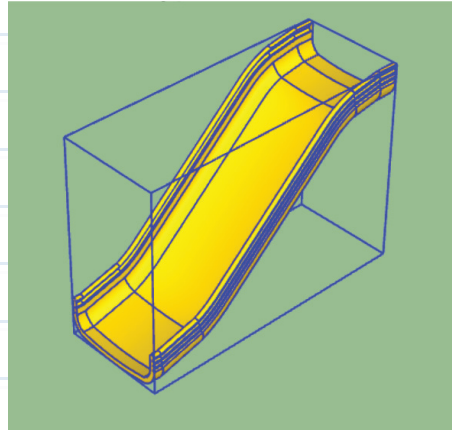



- c. Select the rotate tool. Hold your mouse on the "ground" next to the slide and click once when the rotate tool is blue (this means it is locked to the blue axis).

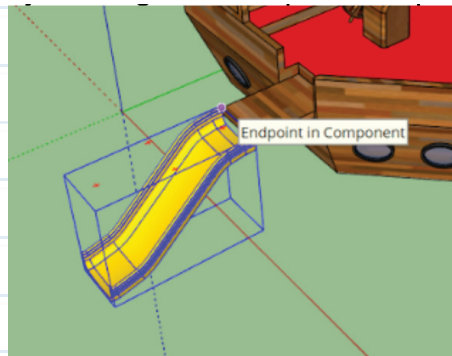


7 Adding models from the 3D Warehouse

- d. Click once more outside of the rotate tool and move your mouse in the clockwise direction. Type 90, then hit enter. This will rotate your slide 90 degrees.



- e. Select the move tool  and click once on the top left endpoint of the slide. Place the slide by clicking on the top left endpoint (based on the image below) of the plank.



- f. Click on components in the SketchUp Panels on the right. Search for the rest of the SketchUp for Schools Pirate Ship Playhouse components to add fun details to your model!

