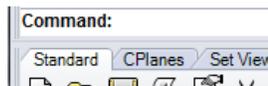


General Hints:

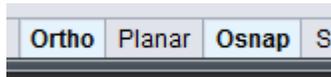
- “click” means left click. “Right click” means right click.
- A right click may also be used: 1) instead of “enter” 2) to restart the last command that was entered
- Clicking the arrow tool  cancels a command.
- Ctrl+Z = undo
- Select multiple things by dragging a box or holding shift while clicking.
- To deselect things, ctrl+click.
- Every once in a while, save your file. Use “incremental save” if you want to save a new version and keep the old versions.



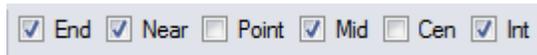
Read the suggestions next to the command prompt. They will tell you what to do to carry out each command.

1. Select the Standard toolbar tab.
2. Making the bottom of the box
 - a. Select Box tool 
 - i. In top view, click somewhere to begin your box.
 - ii. Type the box width press enter or right click.
 - iii. Type the box length and press enter or right click.
 - iv. Type the thickness of the box lid (0.13 for cardboard) and press enter or right click.
 - v. In the perspective window, right click and drag to roll the lid around to see if it looks right.

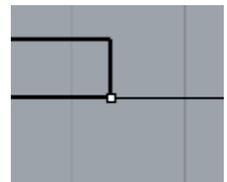
3. Making the sides
 - a. At the bottom of the Rhino window, select Osnap, and make sure that Ortho is also selected.



- b. Select these boxes on the bottom left of the window: End, Near, Mid, Int

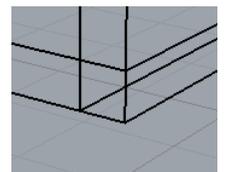


- c. Select the box tool
 - i. With your mouse in the front viewport...
 1. Begin your side by clicking on one of the bottom corners of the box bottom.
 2. Type the thickness (0.13) and enter.
 3. Type the height and enter

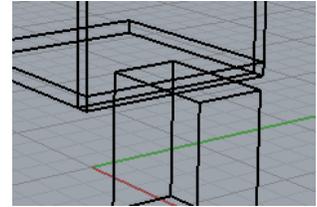


- ii. Move your mouse to a different viewport
 - iii. Stretch the box side that you are making until it is as wide as the box bottom. To finish the side, click on an edge or corner of your box bottom.
- d. Click the Transform tab at the top of the window and select *move*.

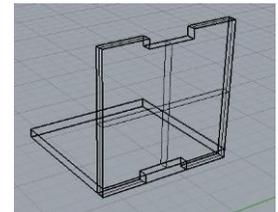
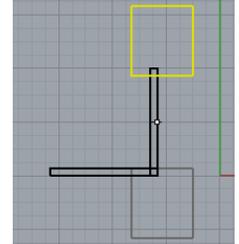
- i. Click on an outside corner of your box side. Move your mouse until that corner matches up with your box bottom corner, so that the edges of the bottom and side overlap.



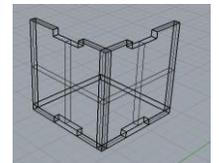
- e. Create mortises in the top and bottom edges of the side panel.
 - i. Draw a box. Then move the box so that the top of the box is even with the top of the bottom panel.
 - ii. Drag the box so that it passes through the side panel.
 - iii. Click the *Transform* tab at the top of the window. Select *mirror*. Create a mirror image box at the top of the side panel.



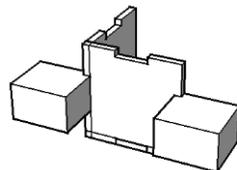
- 1. Select the box that you just drew.
 - 2. Start the mirror plane at the middle (in the vertical dimension). Then move your mouse sideways to create a horizontal mirror plane.
 - 3. Finish the command, creating a new box at the top of the side panel.
 - iv. Use the boxes that you have made to cut notches (mortises) in the side wall.
 - 1. Open the *Solid* tab and click *Difference*.
 - 2. Follow the command prompt directions to subtract your new boxes from the side wall. When you're done, it should look like this.



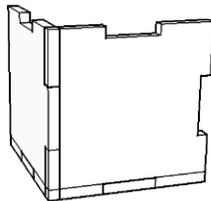
- f. Create an adjoining side panel.
 - i. In the *Transform* tab, select *mirror*.
 - ii. Working in the Top Viewport, mirror your existing side panel across a diagonal of the bottom panel. The result should look like this.



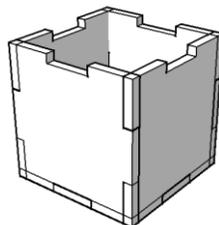
- g. Using the same technique that you used in step e, create mortises in the sides of your original panel.
 - i. First create an overlapping box where the edges of the side panels meet.
 - ii. Use the *mirror* command to reflect the cutting box across the side panel.



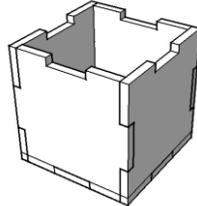
- iii. Subtract these little boxes from the side panel using the *difference* command.



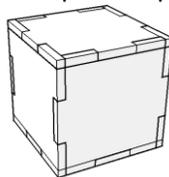
- h. Make more sides
 - i. Working in the top viewport, use the *mirror* command to reflect one of the existing sides to an opposite side of the box. Now do this with the other existing side.



- ii. Begin the *Difference* command, but complete step two below before fully executing the command.
 1. The objects “to subtract from” should be the walls that only have mortises at the top and bottom. Select them and enter.
 2. Before the selecting the objects to subtract with, type “D” and hit enter. You will want to keep the sides that you are subtracting with, and typing this D changes the mode to “Deleteinput=No”
 3. The objects “to subtract with” should be the walls with mortises in every side. Select them and finish the command.

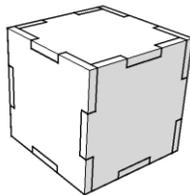


4. Make the top and finish the bottom.
 - a. Use the *copy* command to copy the bottom onto the top. Click on one of the top corners of the bottom panel, and then click again on one of the top corners of a side panel.
 - b. Make sure that the top overlaps the side panels in the same way that the bottom panel overlaps

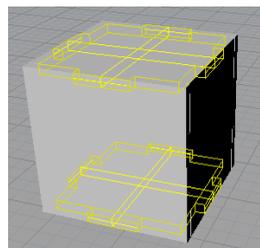
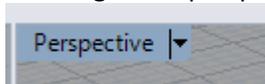


the side panels.

- c. Use the *difference* command to subtract all of the sides from the top and bottom. You can do this all at once. For “subtract from,” select both the top and bottom. For “subtract with” select all of the sides.



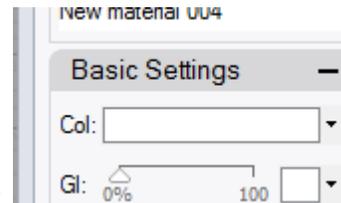
5. Add color so that you can see the different parts clearly.
 - a. Working in the perspective viewport, click the down arrow and select *render* view mode.



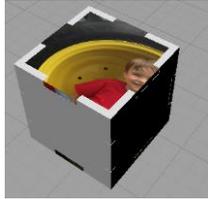
- b. Select two opposite sides of your box.
 - c. Find the tabs on the right side of the menu. While your box sides are selected, click the paint



tube, and make sure that “assign material by: object” is selected.

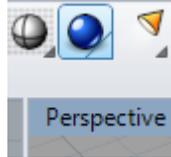


- d. Click the rectangle next to "col" and then select your color
- e. Repeat steps b-d for the two other pairs of opposite sides, but give those sides different colors.
- f. Just for fun, if you want to cover the box pieces with a jpeg, you can click the color box under textures, instead of basic settings. Then choose a jpeg that you have downloaded to your



computer.

6. Save your creation on your drive.
7. Create a rendering to turn in.
 - a. In the perspective viewport, orient your box nicely.



- b. Then click the blue render button.
- c. Using the file menu, save your rendering as a jpeg.
- d. Name it with your name and email it to Mr. Stapleton.