

RHINO BASICS

Material and Technology
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What you are about to learn:

1. The Rhino interface
 - 1.1 Menu
 - 1.2 Viewports
 - 1.3 Command Prompt
 - 1.4 Toolbars
 - 1.5 Panels
2. Select a Viewport
3. Move around
4. Give a Command
 - 4.1 by Menu
 - 4.2 by Toolbar
 - 4.3 by command prompt
5. Snaps and Gumball
6. Select Objects
7. Move Objects

Further info and credits

Tutorial prepared by Marek Runde. Revised by Nadia Elkady, MA.

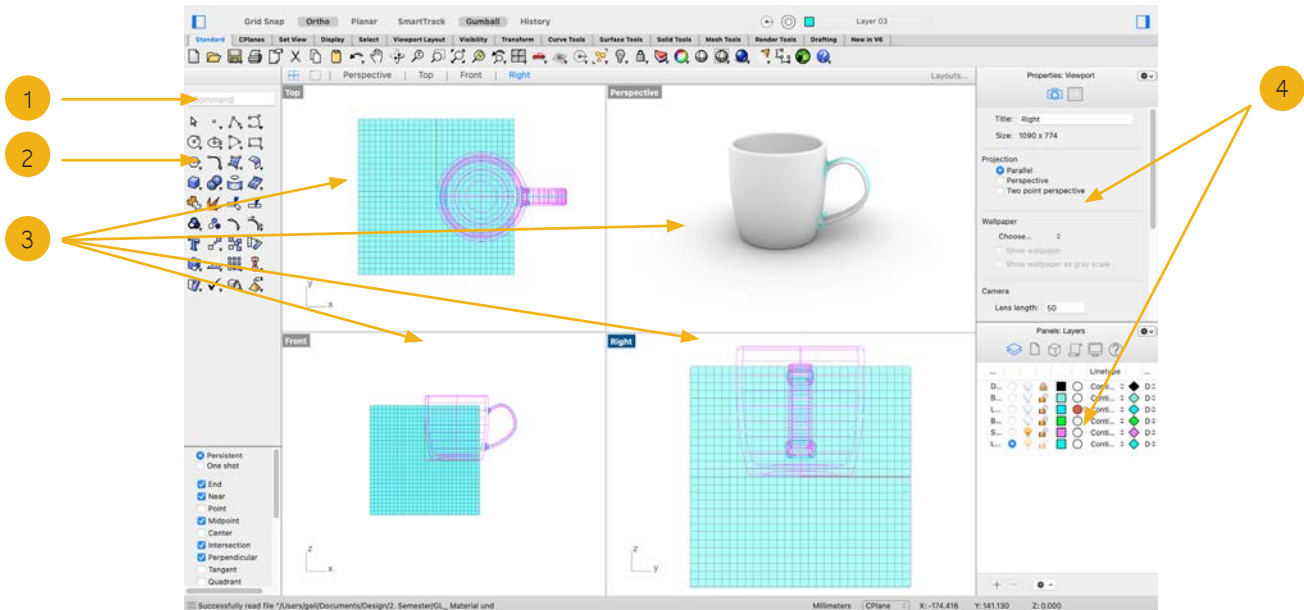
For more tutorials visit:

<https://www.rhino3d.com/learn/>

<https://www.rhino3dhelp.com/>

Youtube is also a great source for Rhino tutorials.

1. The Rhino interface



The sidebar is where tool-bar groups are displayed, it consists of graphical icons that symbolize commands. Some icon buttons also include a small arrow, this signifies further commands. Right clicking on the icons reveals a drop down menu displaying them.

1 Command bar

This is where commands can be typed out. After the command has been selected, several prompts related to this action will be displayed, allowing for further setting selection.

2 Toolbars

The sidebar is where tool-bar groups are displayed, it consists of graphical icons that symbolize commands. Some icon buttons also include a small arrow, this signifies further commands. Right clicking on the icons reveals a drop down menu displaying them.

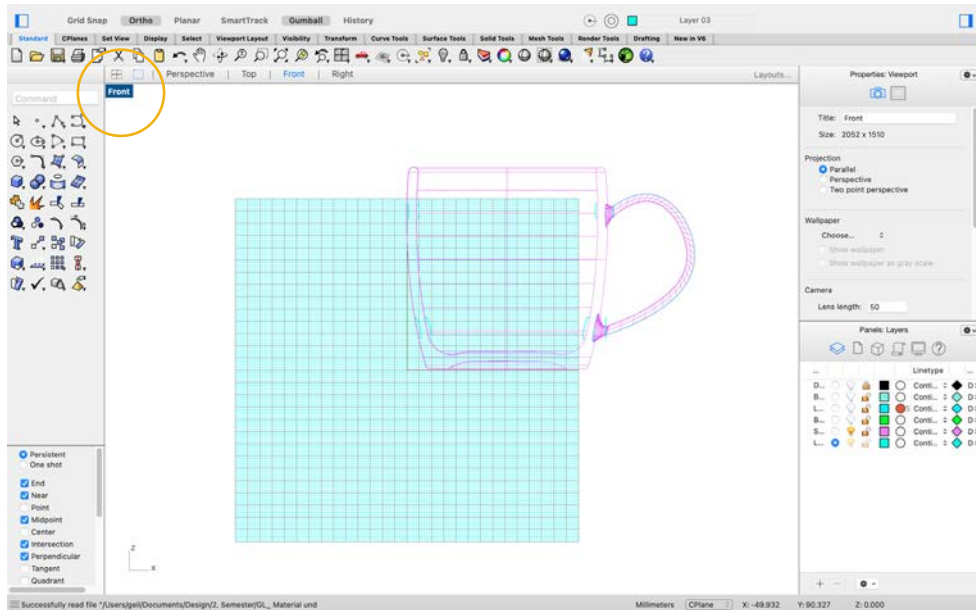
3 Viewports

All geometry can be seen, edited, and moved through the viewports.

4 Panels

You can access layers, properties and other options in the tabbed panels.

2. Select a viewport



Since Rhino is a three dimensional program, you need to be able to look on your object from different angles.

Switching viewports can be crucial to your work flow. It ensures that you have a full scope of what you are working on and that all geometry is where you intended it to be.

Double-clicking on the name of a Viewport enlarges it and gives you a closer look at the selected view, to return to the 4-View Viewport, double click on the name again.

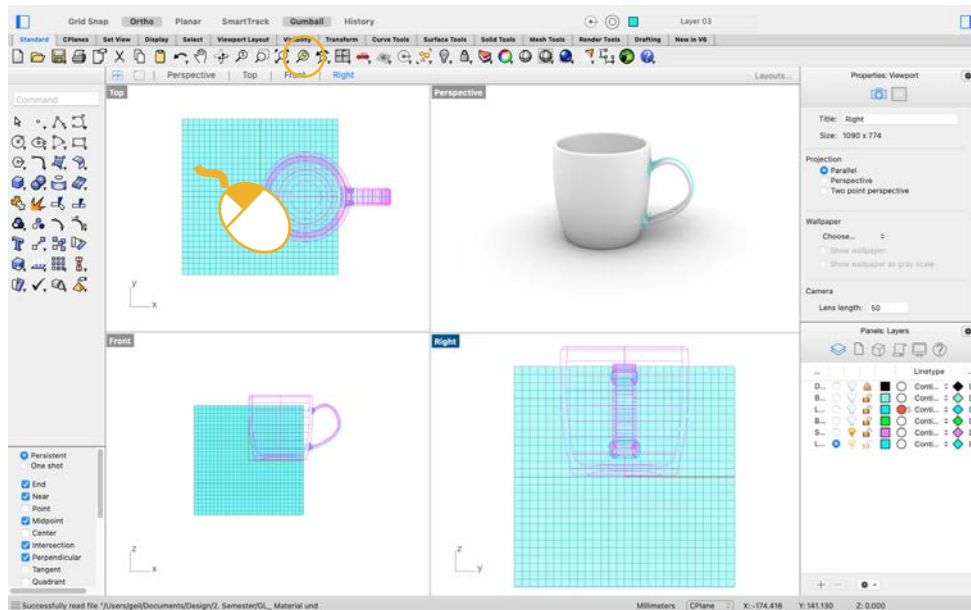
Hovering over the borders of the viewports gives you the option of changing the sizes of the panels according to your work flow preferences.

The bottom left corner of each viewport displays the axes you are working with.

Tip:

Refrain from working solely in the Perspective view. This is to avoid inaccuracy due to false judgment of position and distance.

3. Move around



Moving within the viewport is done using your mouse. Whilst in the viewport you want to pan around, simply click and hold the right button on your mouse and drag it to the desired position.

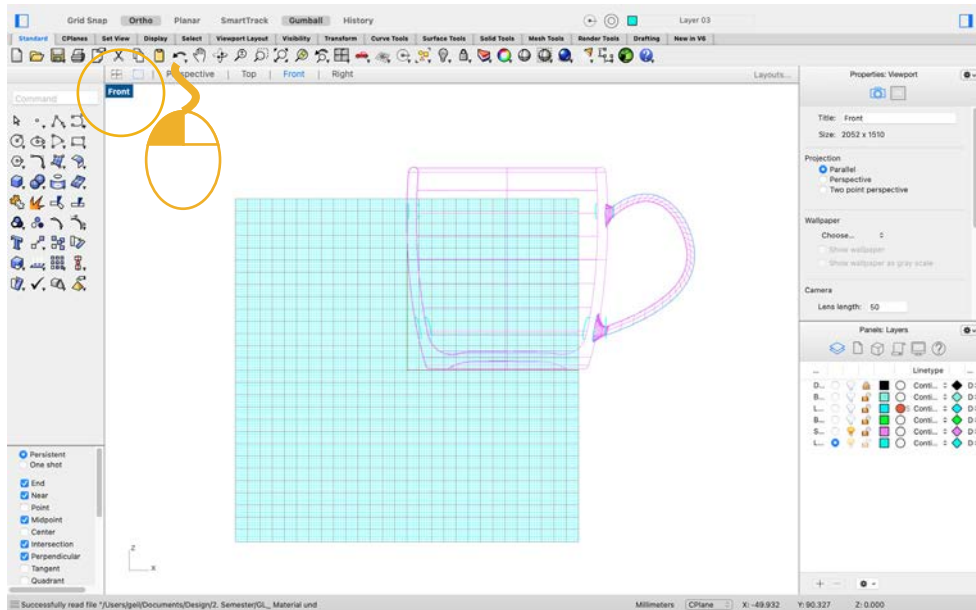
To move the plane, press the shift button while moving the mouse.

Tip:

In case of viewport coordination confusion, select your geometry and click on the “zoom selected” option. This will center your object in the active viewport.



4. Give a command



The method you use to pick your command is based on your personal preference. You can use the menu at the top of your window, select commands from the sidebar, type in commands, or even use shortcuts.

You can find out whether or not your performed command was successful by reading the gray bar at the bottom (Mac) or the text box above the command bar (Windows)

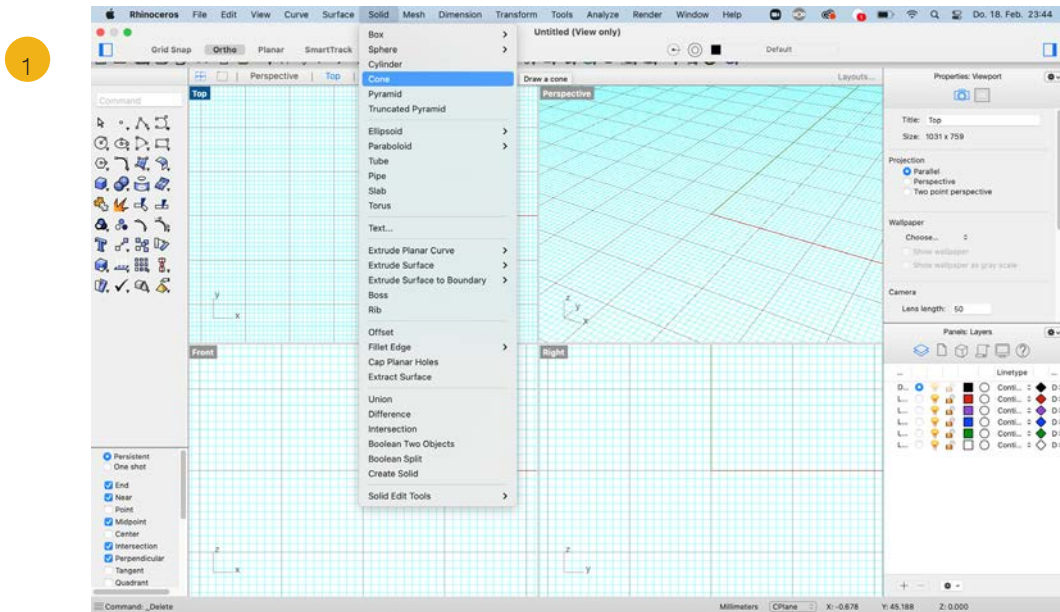
Tip:

Pressing ESC cancels every command.

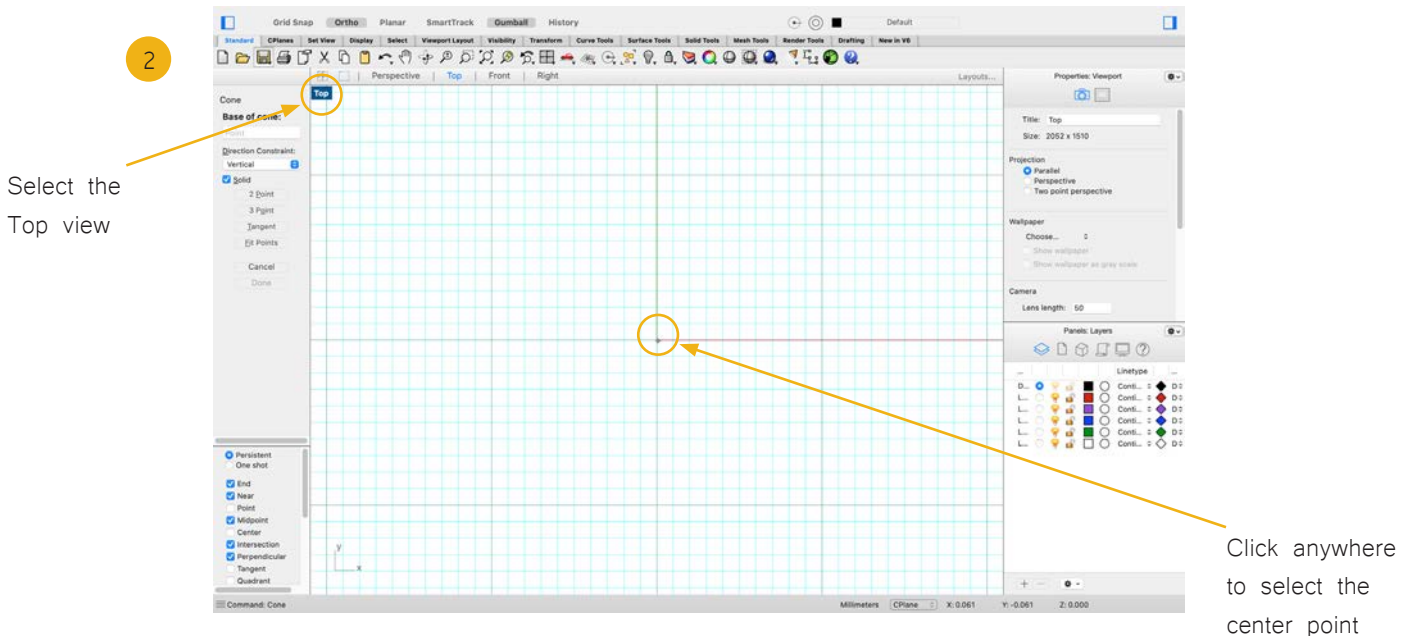
Pressing enter or right clicking repeats your last command.

Drag down the command line to view the command history.

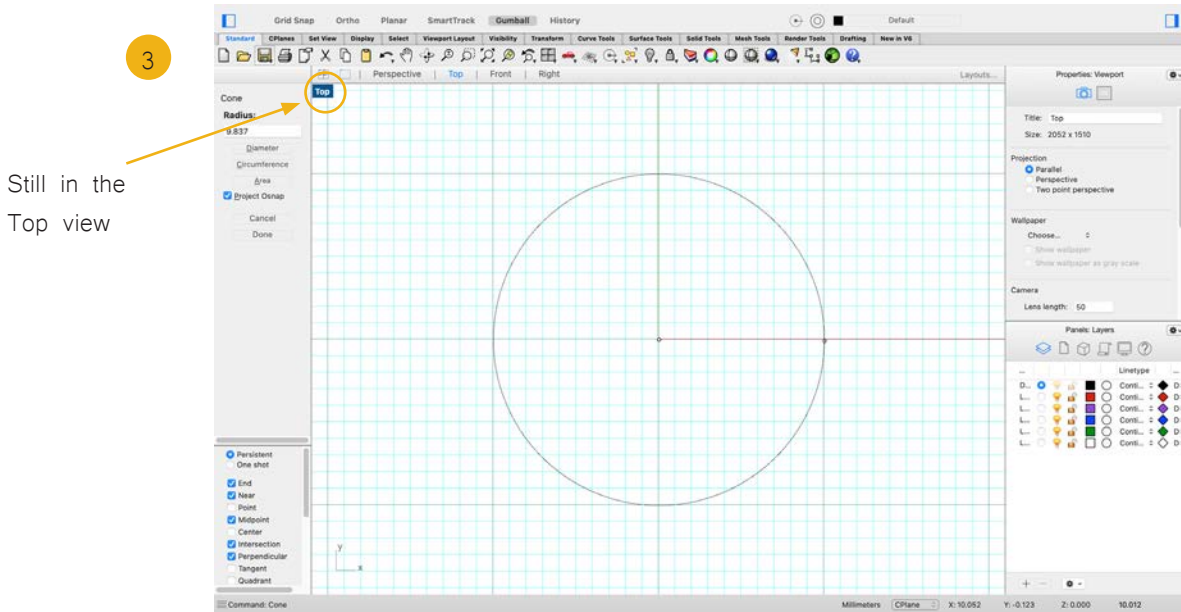
4.1 Command from Menu



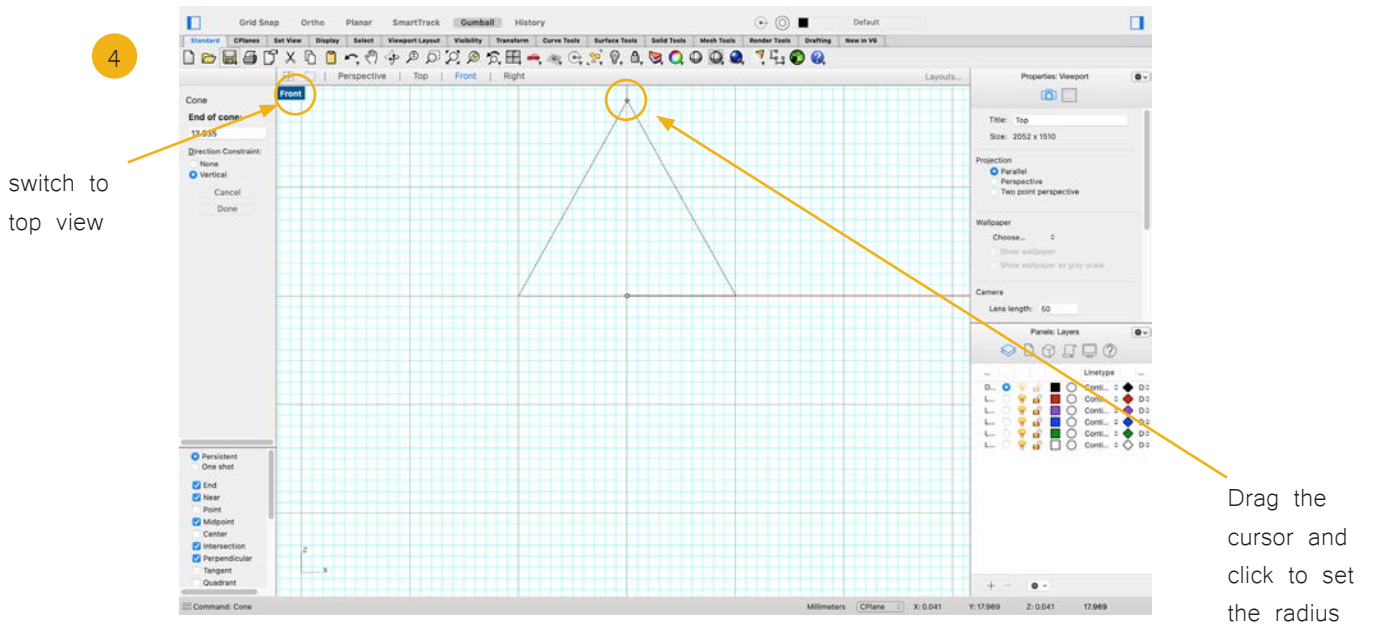
Let us create a cone by choosing from the top menu.
A cone is a “solid”, so it can be found under the “Solid” menu.



Go to the Top viewport and select where you want the center point of the base of the cone to be. This can be done either by entering coordinates (e.g. 0,0) or by clicking on the desired location.



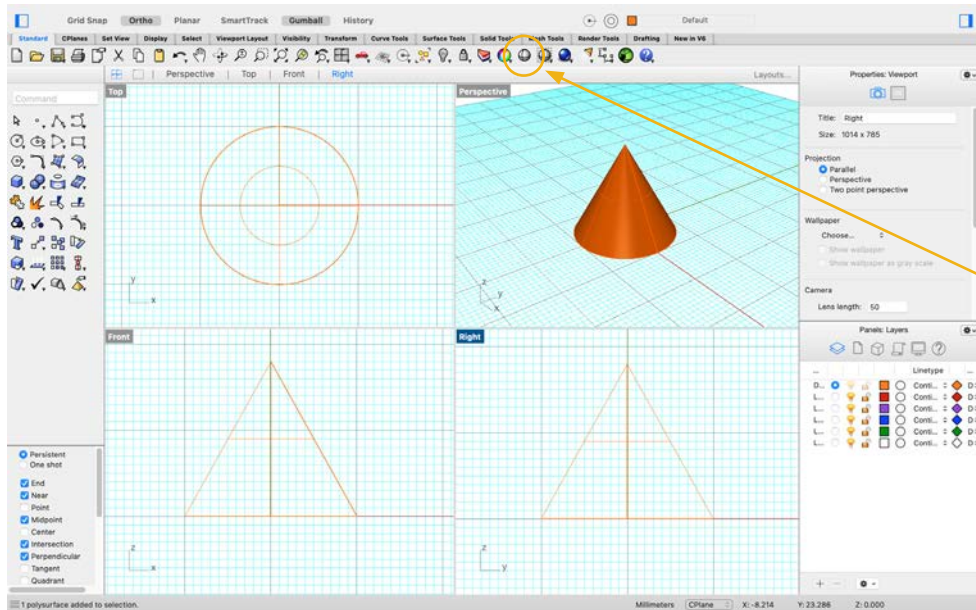
Now you choose the radius for the base. You can do so by typing it in or by simply dragging the mouse to the desired point and clicking.



Switch to the Front viewport. Now set the tip point of the cone. Do so by typing in the coordinates or by dragging the cursor and clicking to draw the cone.

4.2 Command by Toolbars

5



Select the cone and activate the shaded view

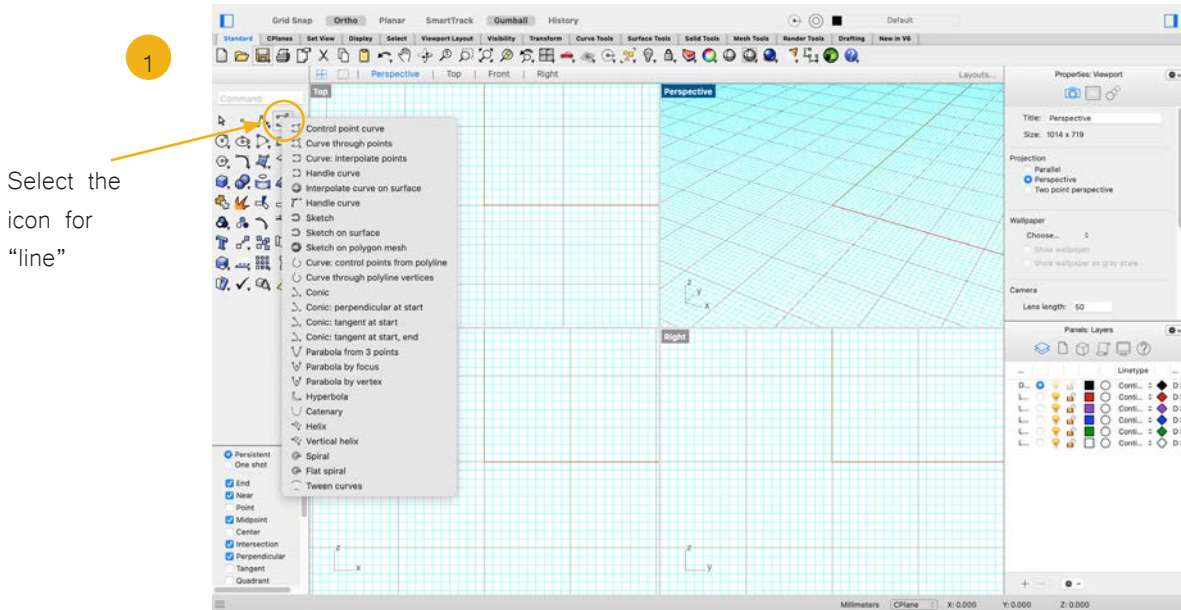
Now switch to the Viewport 4-View or to the Perspective viewport to see the result of your work.

Tip:

Try out the three dimensional “camera” in the Perspective viewport.

Check out what the “zoom selected” function does.

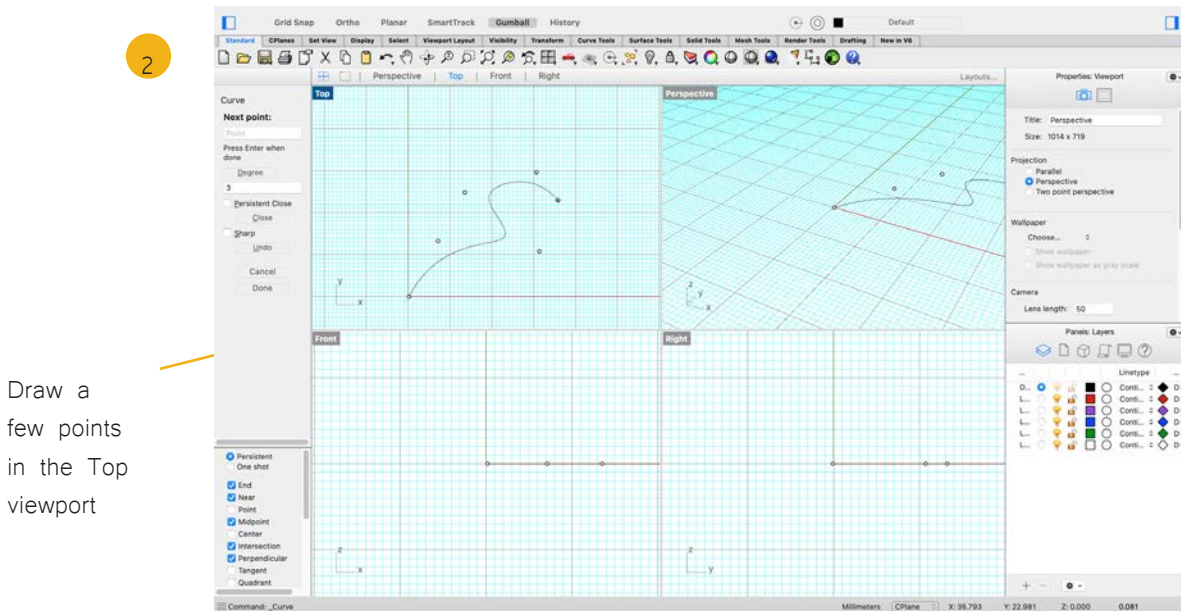
Use the “shaded” preview by clicking on the grey marble in your top toolbar.



Select the icon for "line"

Toolbars provide a graphical interface to the commands.

Now we will draw a line. Go to the icon for lines in your toolbar. By holding down the mouse button you can see what other options there are. We are going for "control point curve".

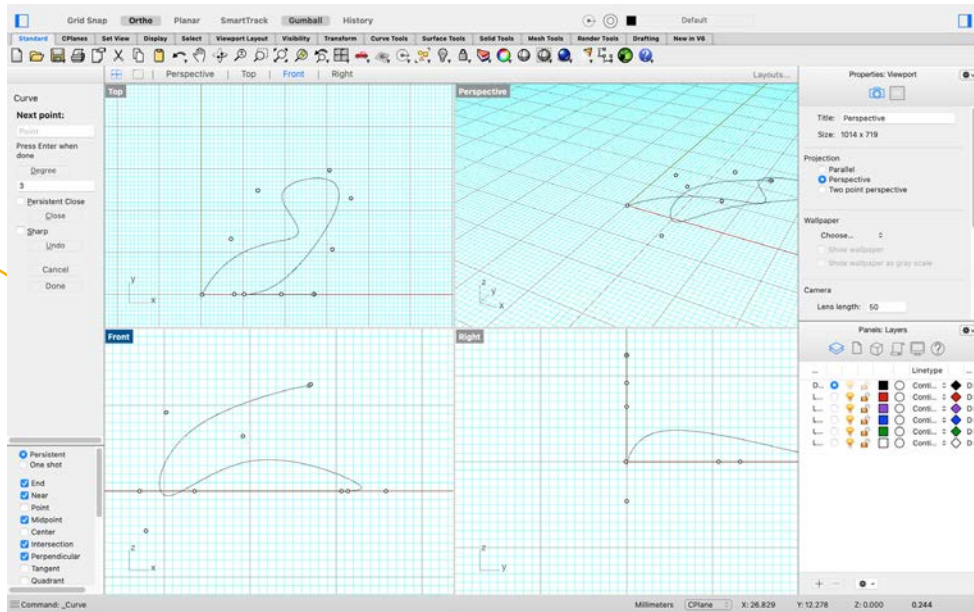


Draw a few points in the Top viewport

Start the curve in the Top viewport. Make a few points by clicking the mouse.

3

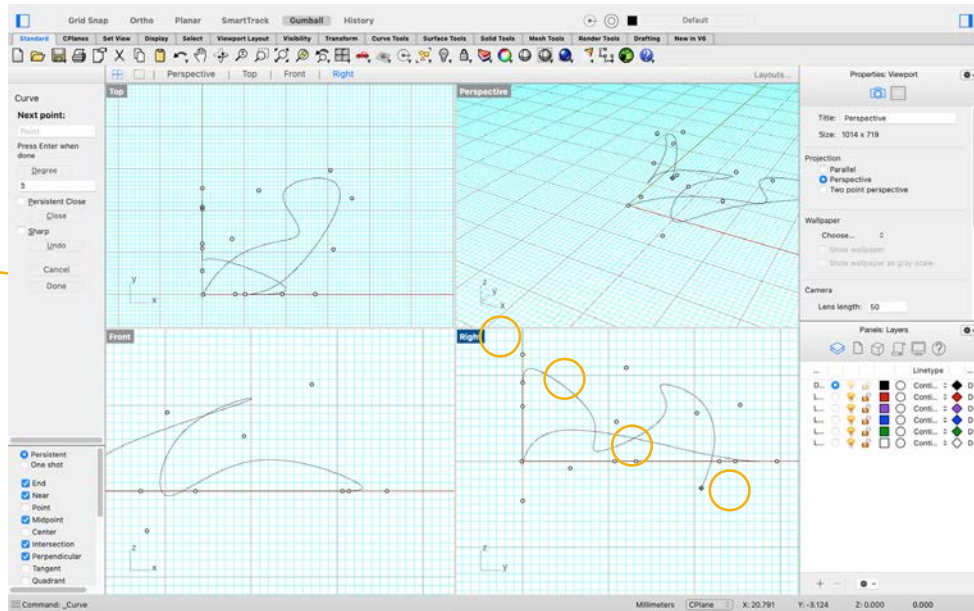
Draw a few points in the Front viewport



Move the cursor to the Front viewport and draw a few points there by clicking the mouse.

4

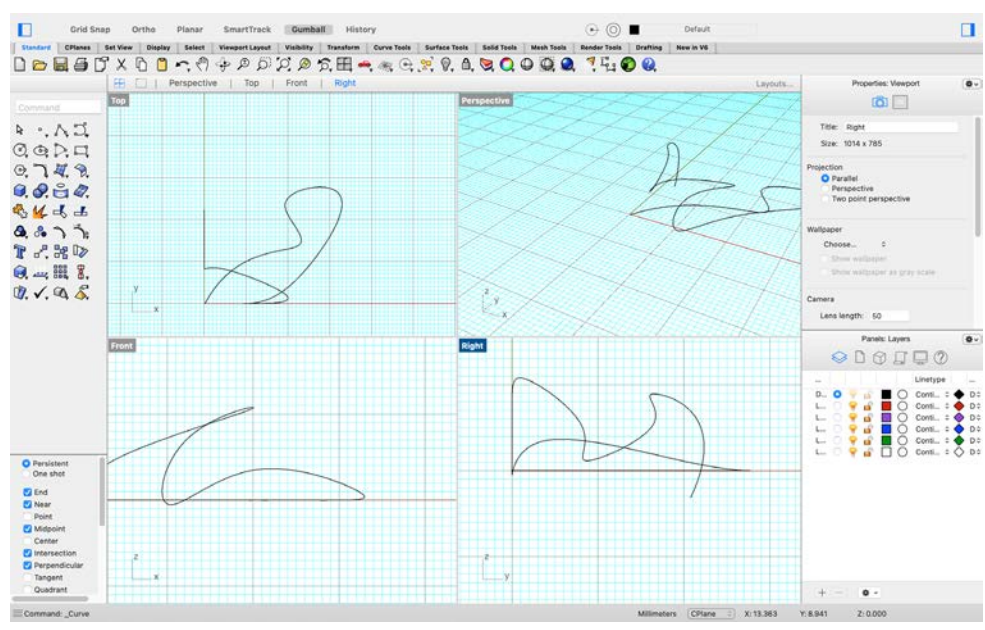
Draw some points in the Right viewport



Now draw some points in the Right viewport.

5

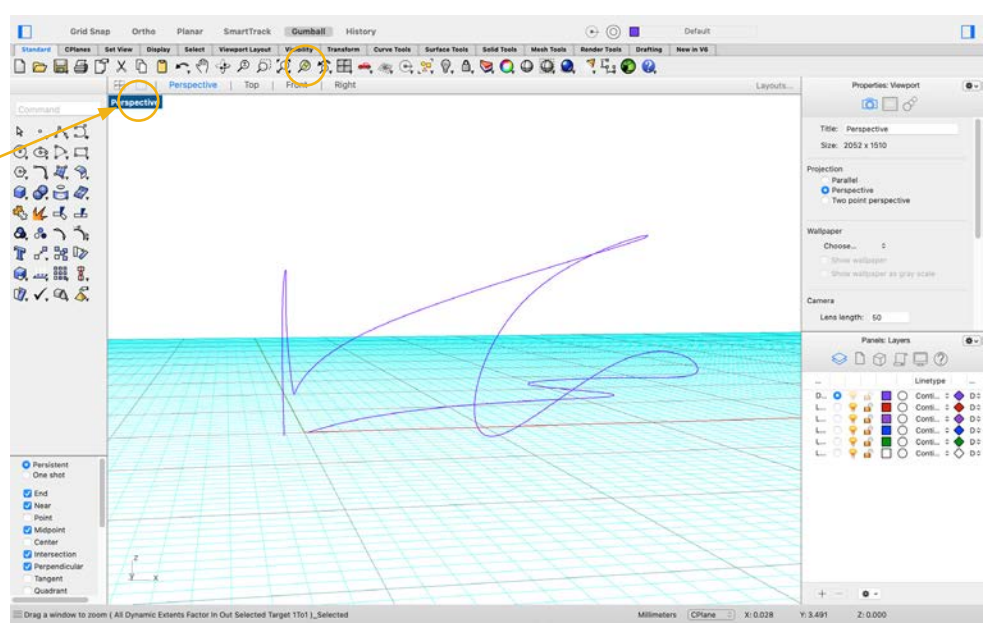
Press the spacebar or rightclick your mouse



By right-clicking the mouse or pressing the space bar you finish the line.

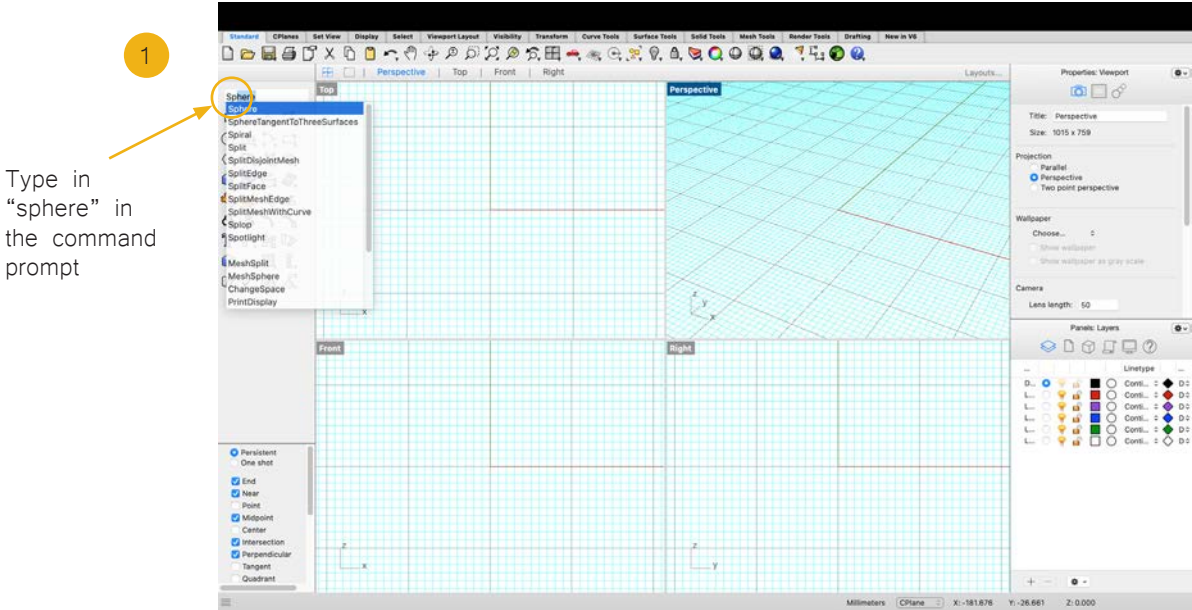
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Look at what you drew in the Perspective Viewport



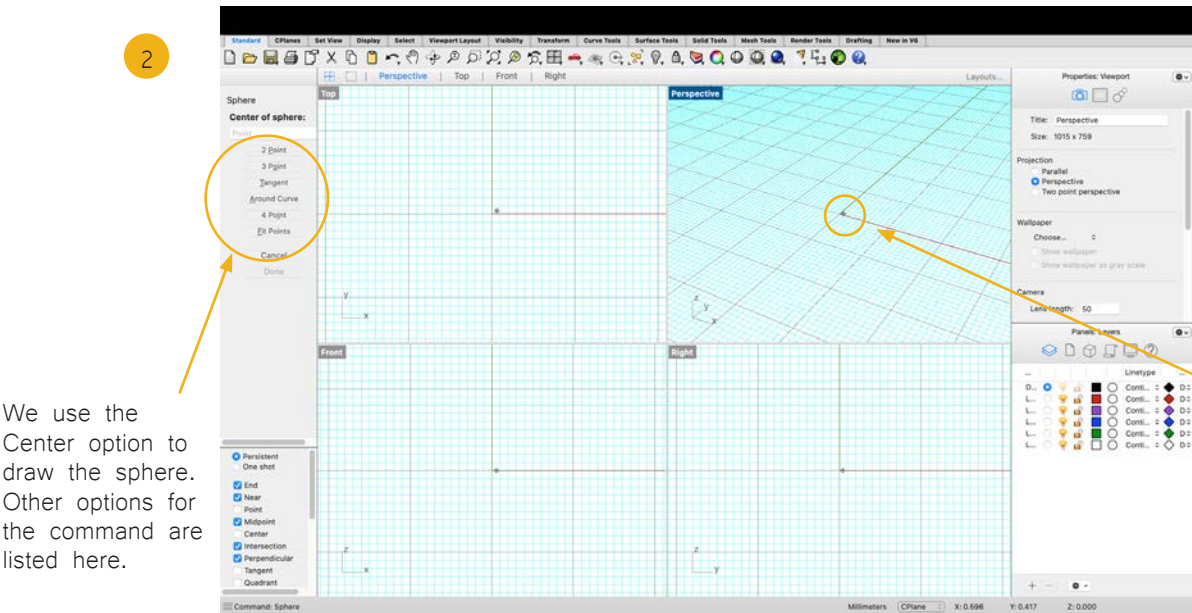
Switch to the Perspective viewport and select your curve. Hit the “zoom selected” button and look at the outcome of your efforts. Drag with the right mouse button clicked to pan and have a look at the curve from all angles.

4.3 Command by prompt



Type in "sphere" in the command prompt

Click at the command prompt, and type "Sphere". When you type the first letters of a command, a list of possible commands appears. The most likely candidate auto-completes. When the command name Sphere appears, press Enter, or click on Sphere from the list. The default option for the Sphere command is Center, Radius. This means that these are the two variables you can control. You must first identify the location of the center of the sphere, then you can type in the length of the radius.



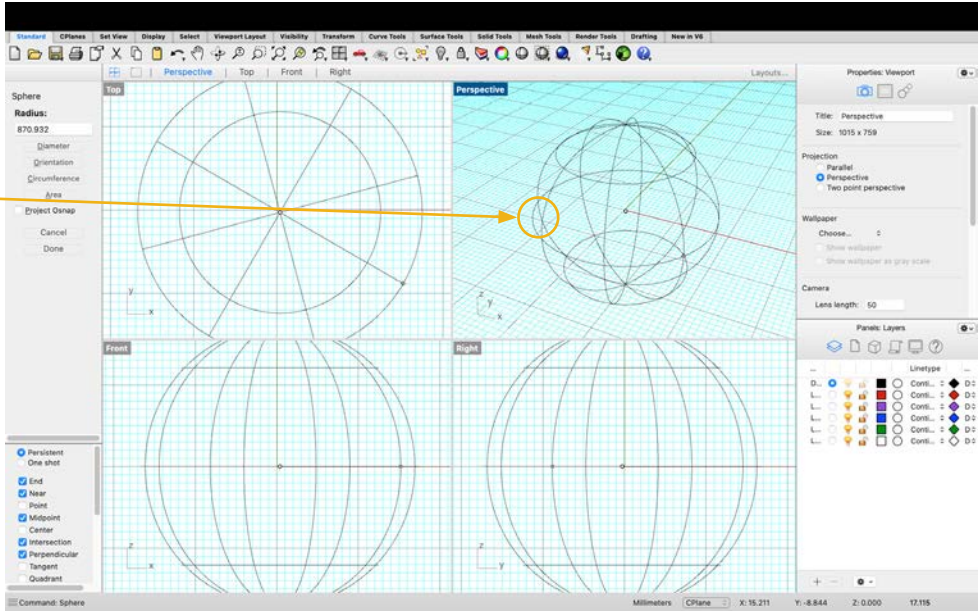
We use the Center option to draw the sphere. Other options for the command are listed here.

Draw the center of the sphere by clicking into the plane in the Perspective viewport

Identify the center point of the sphere at any point in the Perspective viewport by clicking your mouse. Typing in the coordinates is always an option if you need the point at a specific location.

3

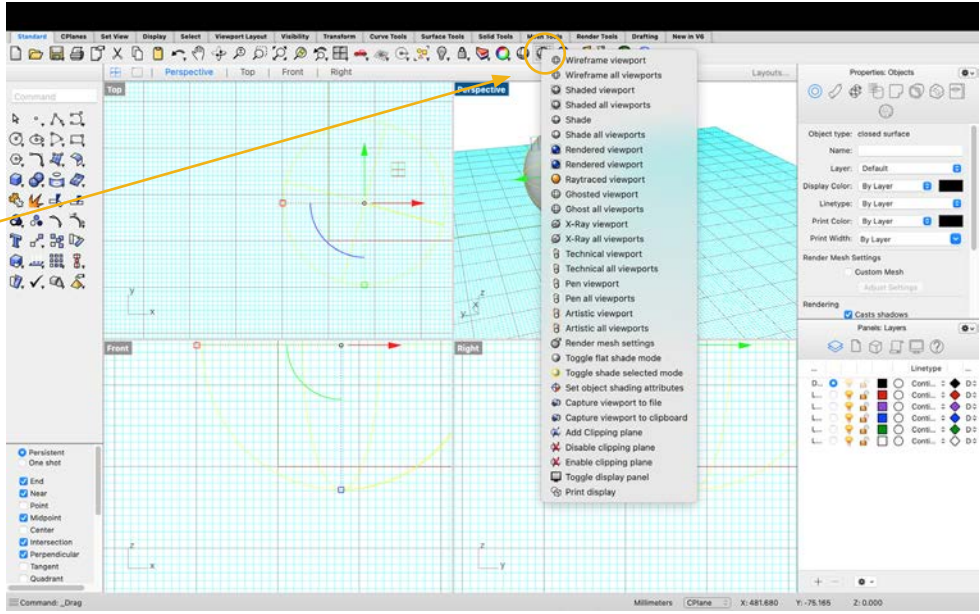
Define the sphere's radius by dragging and clicking the mouse



Move the cursor and click to define the sphere's radius. You can use what ever viewport you like.

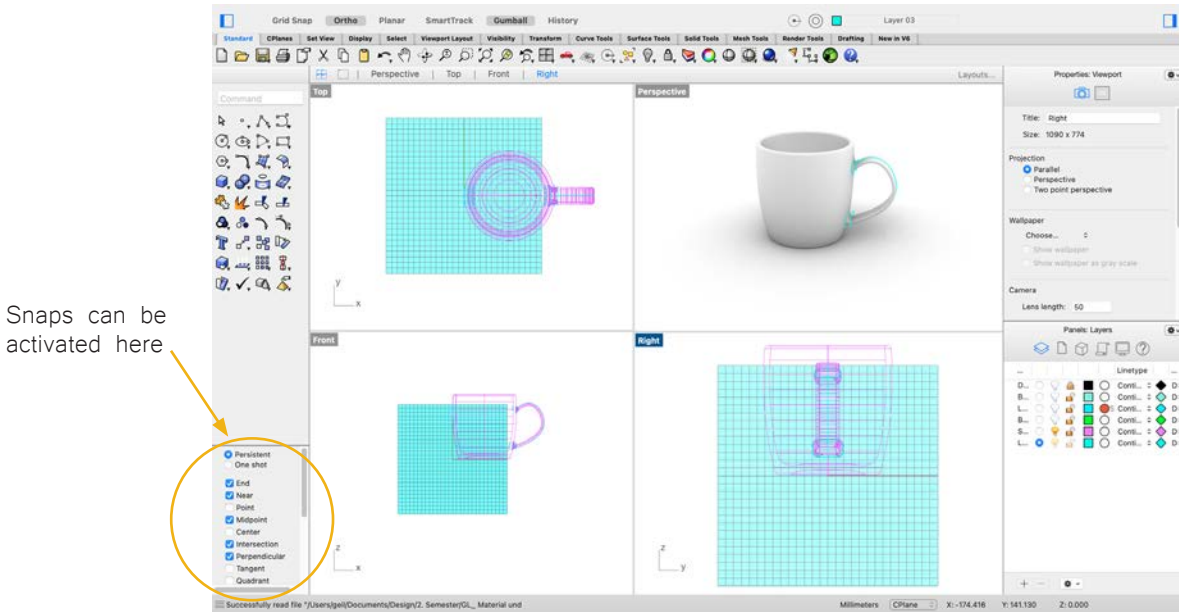
4

Hold down the left button of your mouse to check out different types of pre-view settings

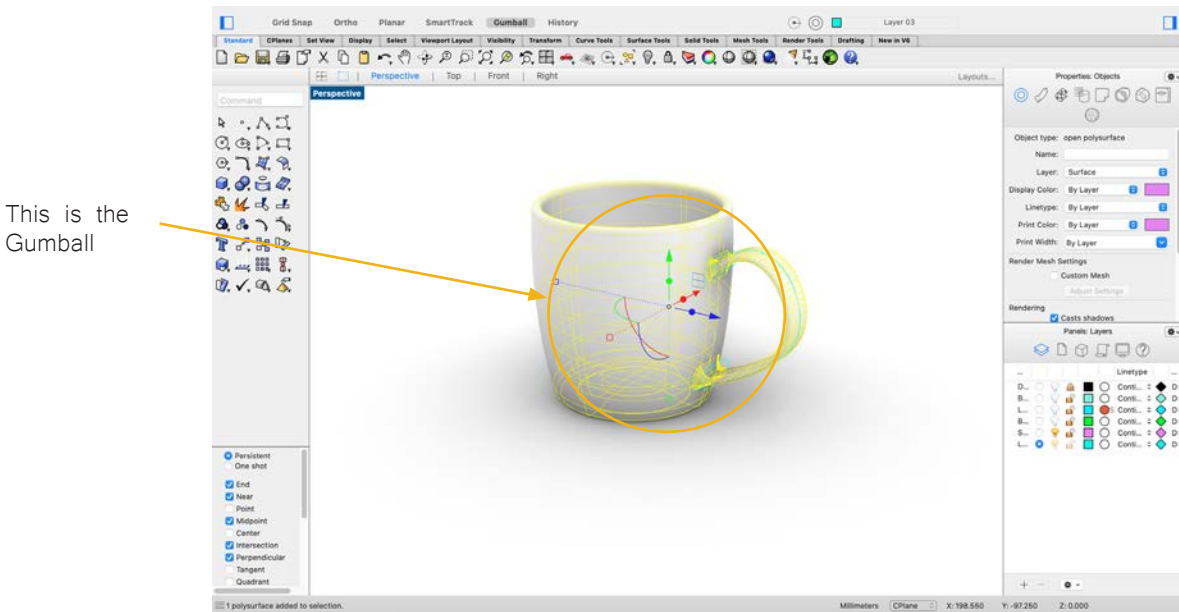


By changing the preview settings your object will be displayed differently. "Ghosted" for instance lets you see the surface but objects in the background are still visible.

5. Snaps and Gumball



Using your Object Snap menu is a necessity when it comes to 3D modeling. Although all geometry can be placed freely along the plane, Snaps are the only way to ensure that points, lines, and any other geometry are actually connected. E.g. If you draw a line, and want to connect the end of that line to another curve, you must have your End Osnap activated.

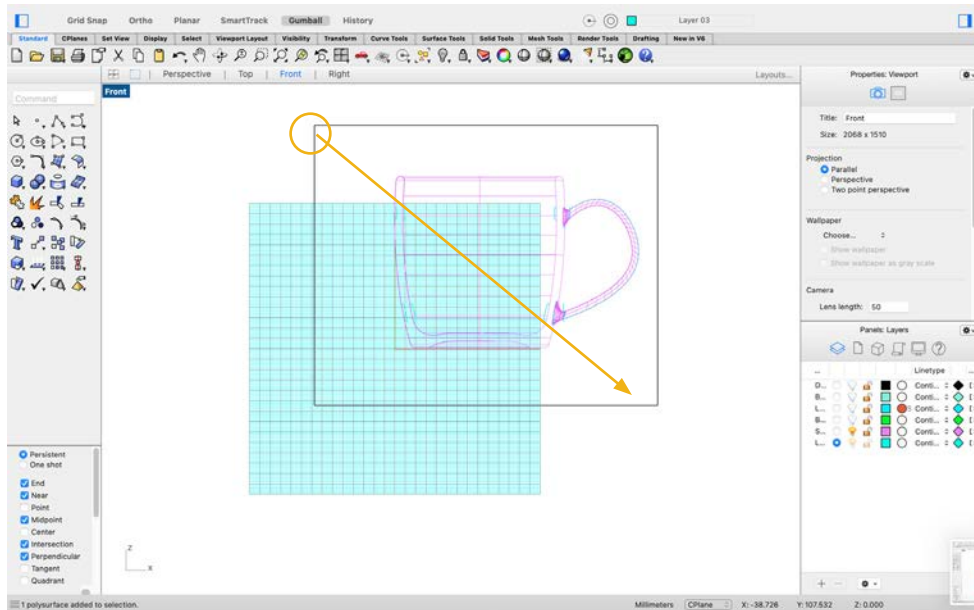


The Gumball function allows for further transformation and manipulation of your geometry. When you select an object with gumball activated, you will see arrows, cubes, and arcs. Arrows allow you to move the object along the X, Y, and Z axes. Arcs let you rotate the object, and the cubes are used to scale the object.

6. Select objects

Drag from left to right:

Things fully inside the rectangle get selected

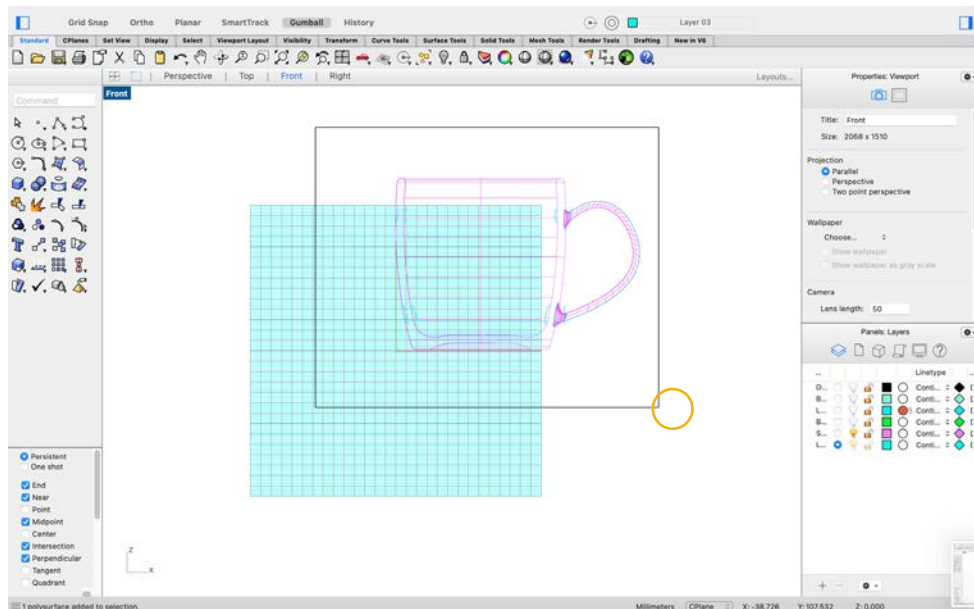


Select single objects by clicking on them.

In case you want to select more than one, hold down the left mouse button and drag it across the Viewport. Release the button and things inside the rectangle get selected.

Drag from left to right:

Things touched by the rectangle get selected

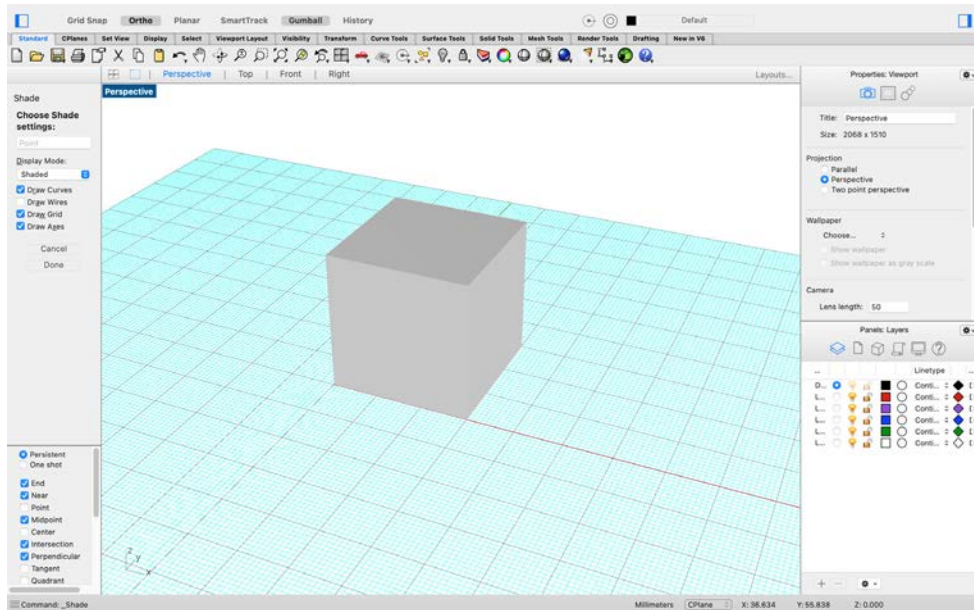


Depending on the direction you drag the cursor across, you can give yourself more control over what you select.

Drag from left to right: things inside the rectangle get selected.

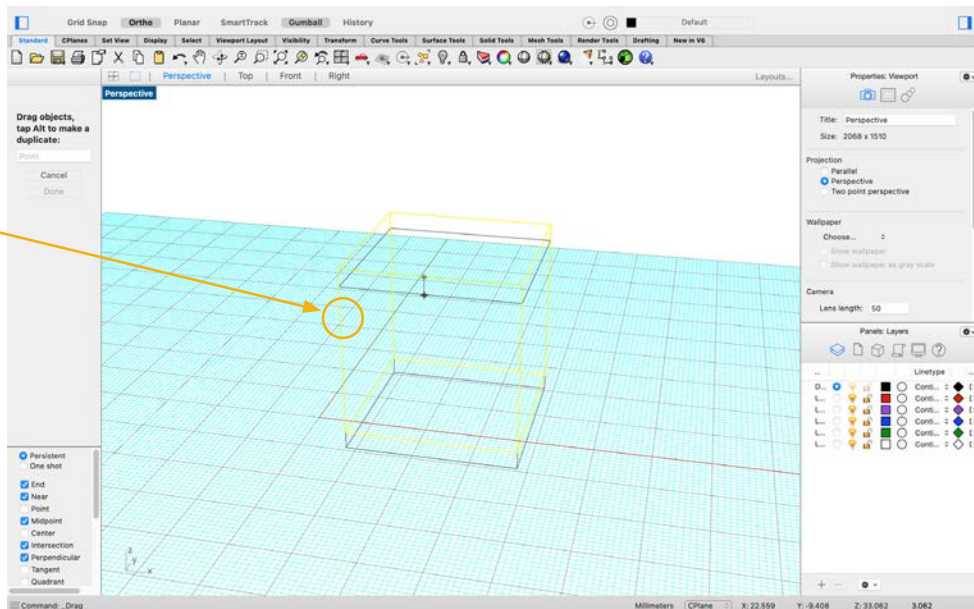
Drag from right to left: everything touched by the rectangle gets selected.

7. Move objects



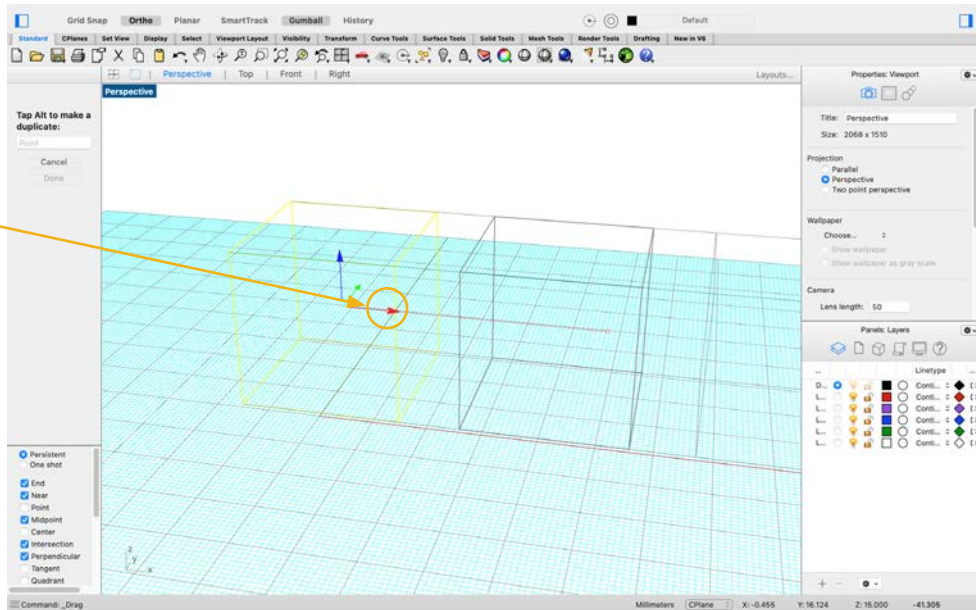
There are many ways to move objects. One is to select an object and simply drag it across the plane with the left mouse button pressed.

Keep the mouse' left button pressed and drag the object across the plain



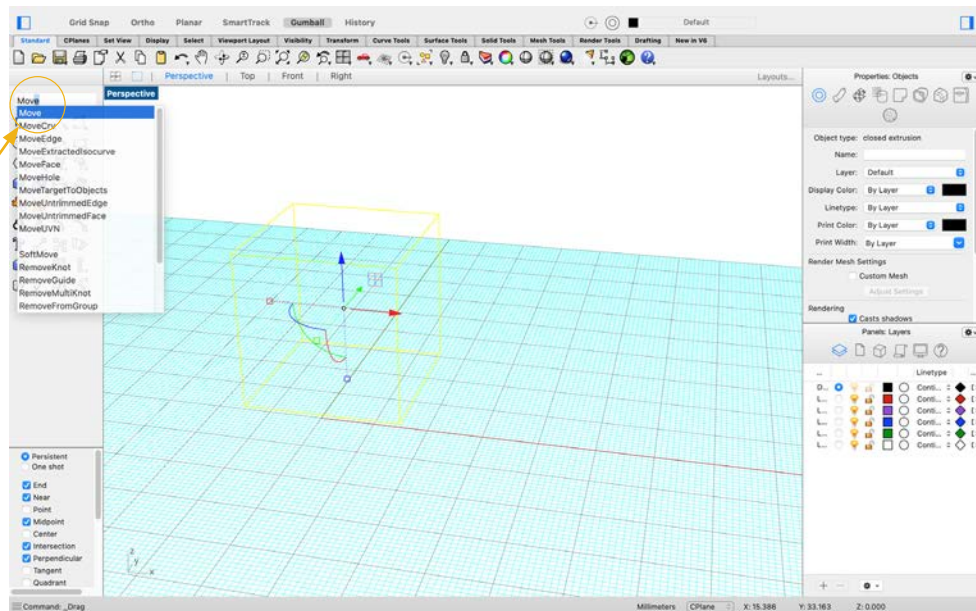
Let go of the button and the object is placed.
Holding down shift while moving locks the direction you move the object.
This method is rather inaccurate though.

Use Gumball arrows to move an object



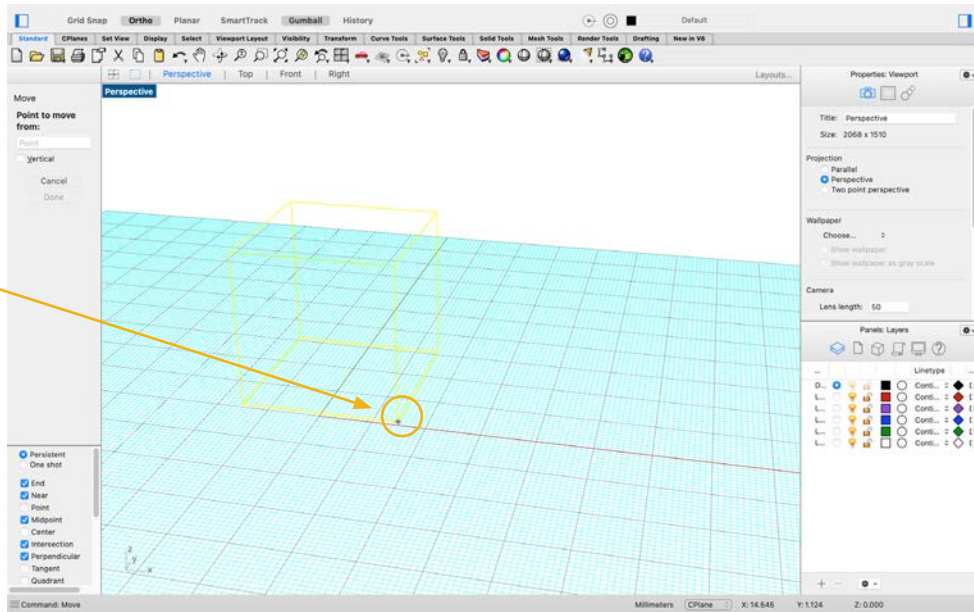
Gumball works almost the same way but lacks precision as well. Grab one of the arrows and move the object with the mouse button engaged.

Type in "move" into the command prompt



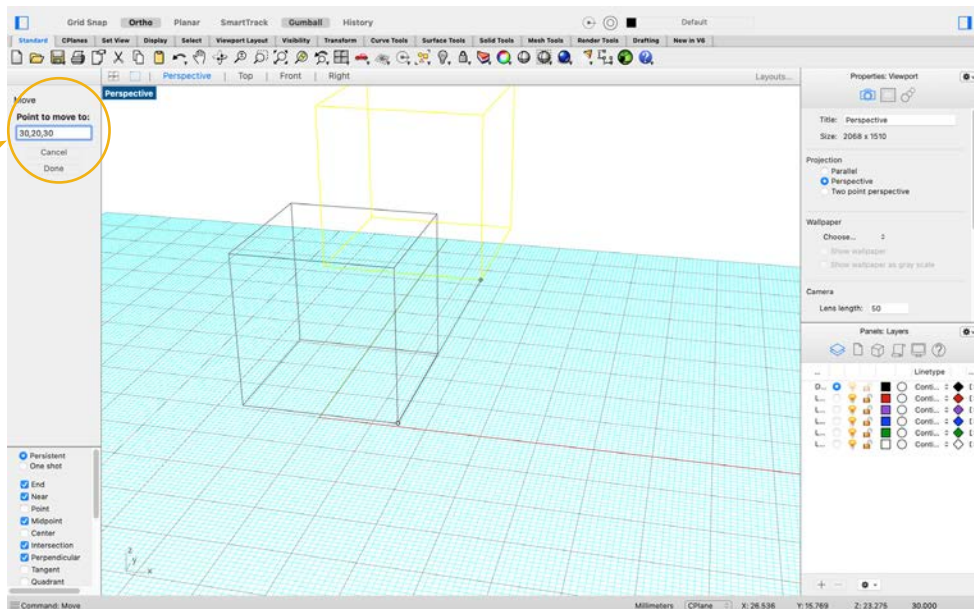
A more accurate and therefore better way to move geometry is by using the move command. Start by typing in "move".

Select the point you want to be moved



Then select one point of the object as reference. You can then either type in the distance you want to move by, or simply click on the point you want your geometry to be.

Type in the new coordinates



Now tell Rhino where you want to have the point relocated to by typing in the new coordinates. Press enter and the object will be moved to it's new location.

