

1 Autodesk SketchBook Designer Overview

1.1 Project Overview

During the following project you will develop an understanding of the general workflow for using digital sketching tools in the conceptual design process. Also initial digital sketching tools within Autodesk SketchBook Designer 2012 will be explored.

Objectives

- Develop knowledge of the Autodesk SketchBook Designer 2012 user interface
- Learn the basic vector sketching tools
- General understanding of shading for adding depth to objects
- Understanding of editing vectors
- Begin developing a thought process for using digital sketching
- Create a basic sphere shape object
- Create a basic box shape object
- Create a basic cylinder shape object

1.2 What is Autodesk SketchBook Designer

Autodesk SketchBook Designer is a complete digital sketchbook allowing for sketching, illustration, and painting to explore ideas. The major purpose of this software would be to assist graphic and conceptual designers in their daily ideation workflow.

Communicating new ideas to others is very effective through the use of pictures and drawings. SketchBook Designer allows these thoughts to be created in a very efficient manner, since these activities will take place in a digital space allows quick design exploration and communication with others.

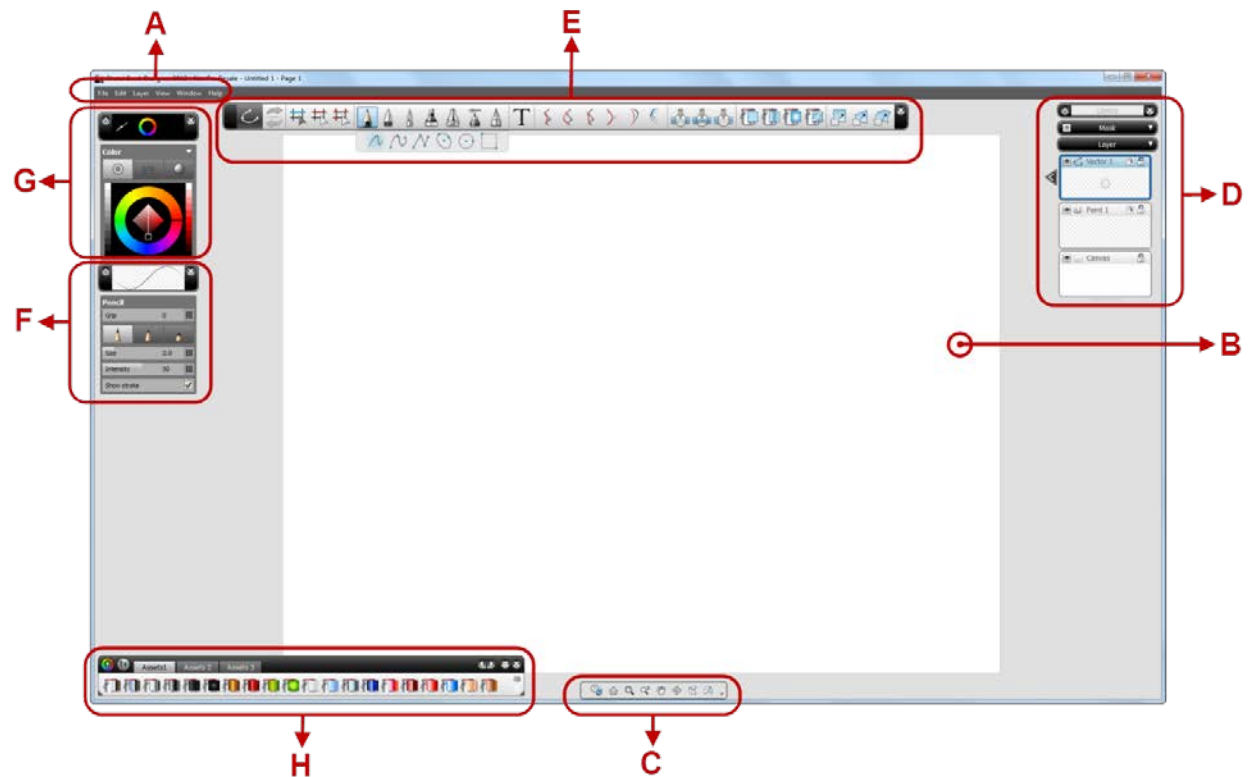
Another key feature of SketchBook Designer is the ability to work in either a format called raster or vector. This allows the blending of a typical computer based painting application with a general 2D CAD application. By using vectors and raster formats at the same time high quality images can be created quickly and edited by the designer.

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1.3 User Interface Overview

The general SketchBook Designer user interface consists of the following areas:

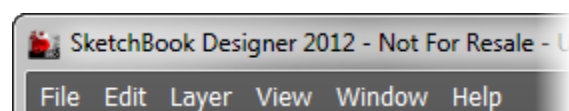


Area - A

The standard general file and software commands are located here like:

- Opening and saving of files
- Printing SketchBook files
- Importing and exporting of images
- Software preference settings

Along with the above you can also access layer management tools and the cut, copy, and paste commands for select items. Additional functions to assist in the selection of SketchBook items are also available.



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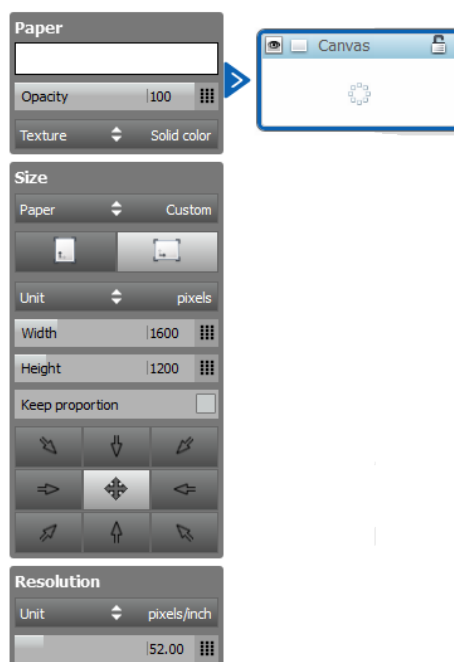
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Area - B

This area is referred to as the canvas (sheet of paper). This is where sketching activities take place on the screen. The canvas size, color, resolution, opacity can all be edited to suit your needs. Access to canvas setting is found under the layer management located in Area D.

Several standard paper sizes are available allowing you to sketch on size you are familiar with. The texture and color of the canvas can also be edited. You can also have a transparent canvas if required.



Area - C

Controls to manipulate the canvas/paper during sketching activities can be found here. There are several commands here to assist you in working with digital media versus traditional paper. For example, being able to zoom in while sketching or even rotate the sheet at an angle during sketching.



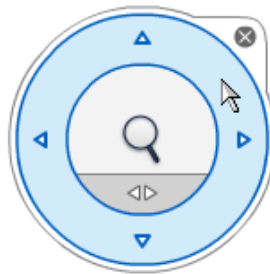
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Listed below are some of the primary commands located within the view bar:

-  Zoom in and out
-  Reposition the canvas
-  Fit to view
-   Flip the canvas
-  Rotate the canvas
-  Show actual size

Also, by holding down the **spacebar** at any given time the following interface will appear. This menu is also referred to as the steering wheel.



You can access the pan, zoom and rotate commands from this menu. Quick access to this menu through holding down the space bar at any given time will become valuable once you become familiar with the application.

Area - D

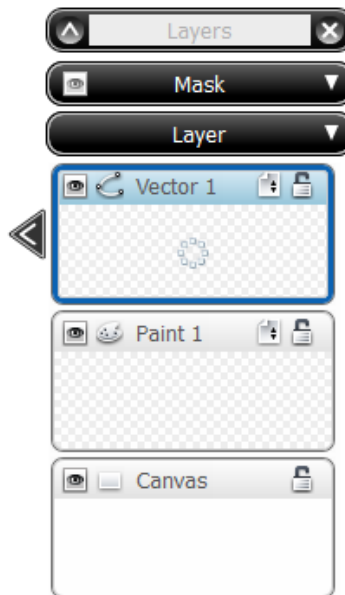
The layer management area controls various items within Autodesk SketchBook. Layers can be looked at as pieces of transparent paper stacked on top of one another. Having the ability to draw on different sheets of paper that are all stacked on top of one another allows for making edits to a given part of the image without affecting the other areas. Layers also assist in the management of various parts of the image.

You can choose from either a paint (raster) layer or vector layer within SketchBook. Different drawing tools are available for each given layer type. Paint layers can be considered a layer where you can draw/paint just like you would on a regular sheet of paper. A wide variety of drawing tools are available when working under this type of layer. A vector layer in SketchBook incorporates similar commands to that of a paint layer with the final result being in vectors that can be changed and have more intelligence. These items are similar to those created in that of a 2D CAD application. Editing the item afterwards is achievable instead of erasing the pixels created by paint tools. Using a combination of both layer types allows for powerful images to be created efficiently.

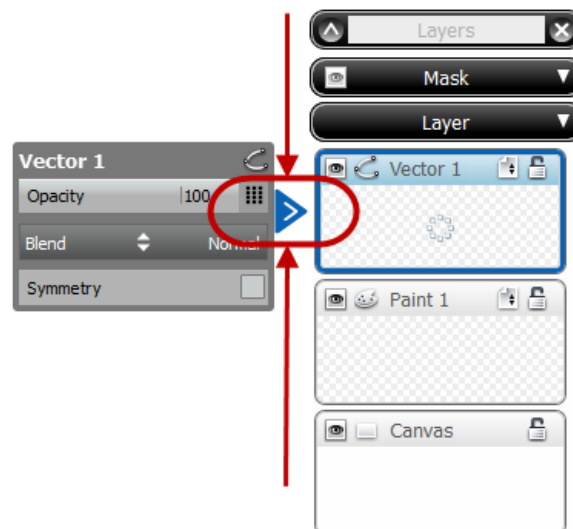
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Access to canvas settings (Area - B) and mask management is also a feature of the layer management area. Masks are also another powerful feature of SketchBook and digital sketching. Masks can be looked as tape or a cover for a given part of the image you are working on. Just like applying masking tape to an object before painting it.



When a given layer is selected you can access the properties for that layer by clicking on the triangle icon shown below. You can control the opacity of each layer allowing items to bleed thru from one layer to the next at a certain level. SketchBook also has filters built in for each layer to further define the bleed style from one layer to the next. The powerful function of symmetry for a layer is also available, allow for an automatic mirror image to be created for the layer something you could not do with manual hand drawing.

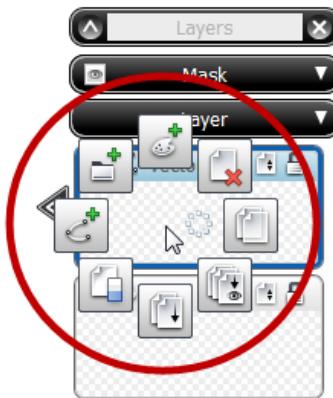


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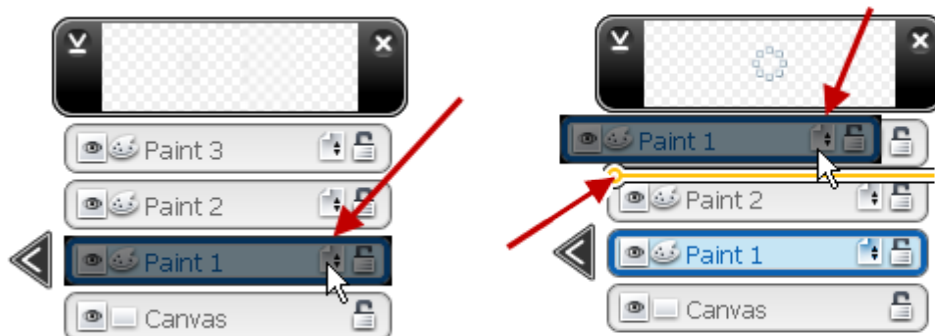
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One of the great features of working in a digital format is the ability to make edits to the image without impacting other areas of the image. The layer management area provides tools to assist in that process. By holding down the left mouse button when hovering over a given layer a marking menu will appear as shown below. This menu will give you access to the following functions:

- Create a new layer either paint or vector
- Duplicate a layer
- Merge the given layer with the one below
- Delete a layer completely
- Clear a layer or remove all content from that layer



Layers can also be rearranged within the layer list allowing for additional workflow methods. If a layer is at the top of list this means it is the top sheet of paper and covers all the layer/sheets of paper below it. By clicking and holding the icon shown below you can drag and rearrange layers as needed.

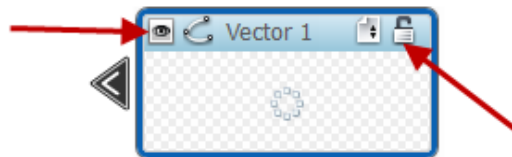


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You can also turn off the visibility of a layer allowing for items to be turned on and off as needed and lock a layer from edits being performed. Clicking the following icons activities these actions:



Area - E

This area is often referred to as the toolbar and can be looked at like your toolbox that holds all of the sketching tools. With SketchBook Designer having both a vector and paint workflow option you can access different tools under each environment. Switching between a paint and vector layer will update the toolbar.

Paint Toolbar:



Vector Toolbar:



Experimenting with one of the tools is an excellent way to get familiar with them and the effects they can create.

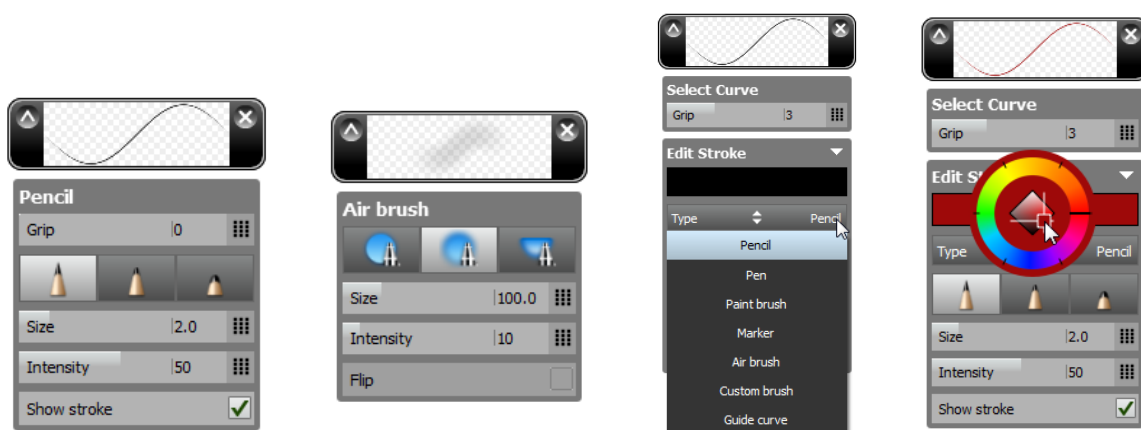
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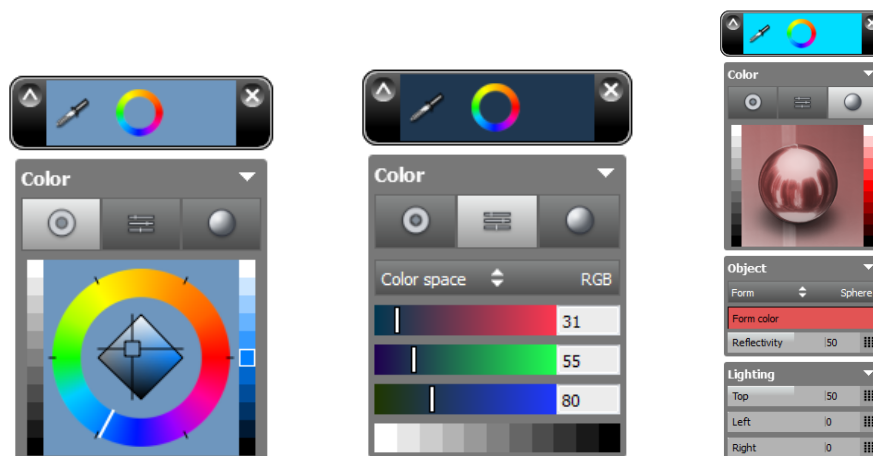
Area – F

Editing properties by using the sketching tool once it has been selected can be accomplished underneath an area called tool editor or also called the attribute editor. Under this menu structure you can select the width and color of a sketching tool or even the type of certain sketching tools. An example would be a dull pencil versus a sharpened pencil. The intensity of the sketching tool and how hard it is being pressed onto the canvas can be adjusted. Furthermore when vector items are created they can be edited here after they are created.



Area – G

This area is called the color editor. From this area you can edit the color of an active tool or of a selected object. You can also use the eyedropper command to match an existing color on your screen. Another great feature in this area is ability to select colors in different types of ways. You can select colors by using the color wheel, a slider system or even off a shaded 3D object.



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Area - H

This area is a custom toolbox or toolbar where you can store custom pencils, color fills, and other custom sketching tools. SketchBook Designer has a variety of default custom tools that are already setup. You can also add your own custom tools to this tool box at any time. These tools are also referred to as assets.

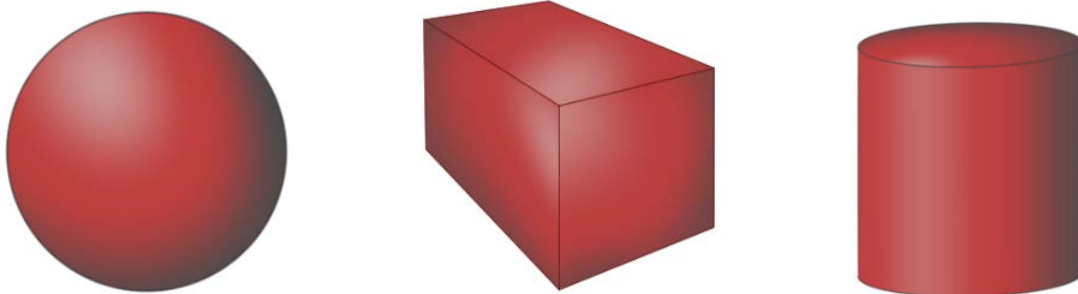


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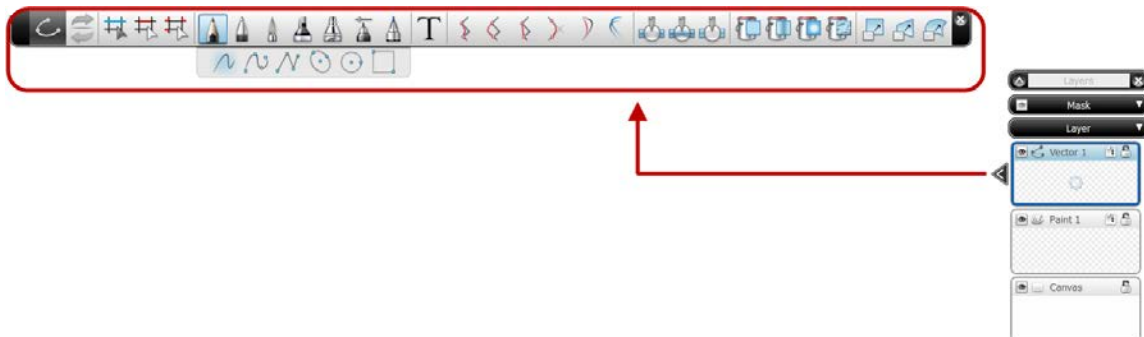
2 Project 1 – Sketching Basic Shapes

Within this guided step by step project you will sketch the following three basic shapes within Autodesk SketchBook Designer 2012.



2.1 Sphere Shape Instructions

1. Since this object requires a perfect circle, let's take advantage of the vector tools to start with. These tools allow us to draw exact shapes and lines. Select a vector layer which also activates the vector tool bar.



2. The vector tool bar provides a variety of drawing tools. For this shape we will use the default standard lead pencil. We will then click the circle icon on the tool bar fly out.



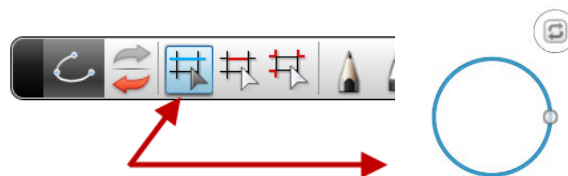
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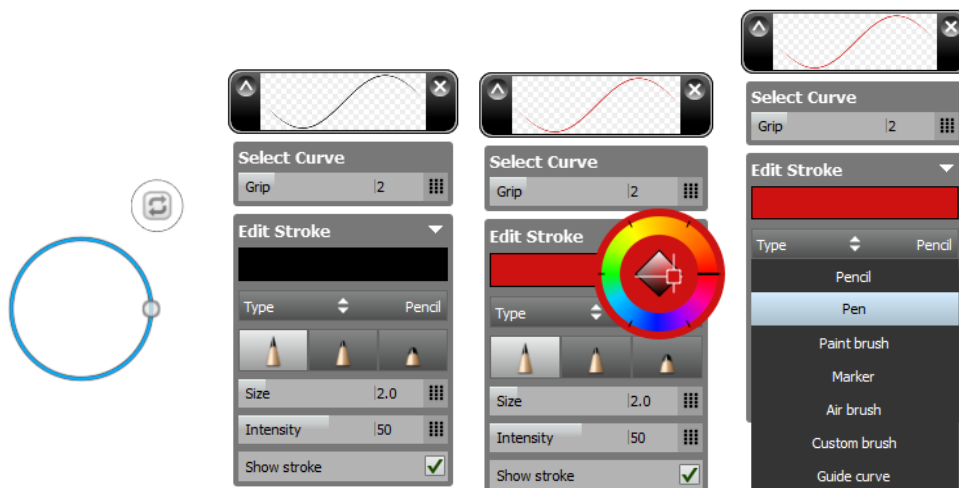
3. We will then click the center point of circle on the canvas area. Continue holding the left mouse button and drag the pointer outwards to change the size of the circle. Once the desired circle size is achieved simply release the left mouse button and the circle is created.



4. A major advantage of working in a vector format is the ability to change items after they have been created. For example, let's say we would like to change the look of the circle prior to shading. By using the select vector item feature we can now make edits to the circle.



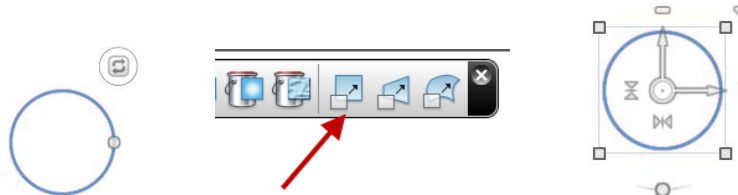
5. Once a vector item is selected you can go over to the tool style editor and modify the color, thickness, and even change the type of tool that created it. For example let's change the lead penciled circle to a dark red circle that was created with a hard tipped pen. This will change the look and feel of the circle.



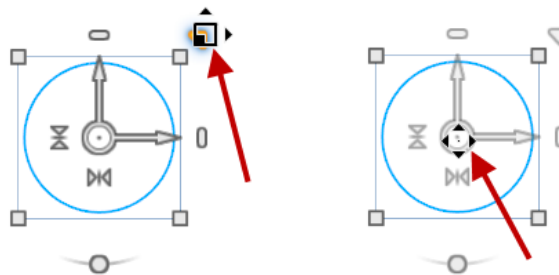
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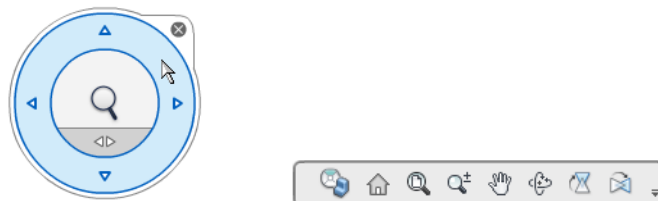
- The size and location of circle on the canvas can also be modified after the fact by using the modify item tools. By using the vector item select command again select the circle then activate the move & scale tool with in the modify item tool bar.



You can now scale up the circle by clicking the upper right icon and dragging it outwards to the desired location then pressing the enter key. You can also move the circle on the canvas by hovering over the center of the move & scale icon until you see the pan icon. Once this icon is present hold down the left mouse button and drag the circle to the desired location.



- Let's experiment with the canvas manipulator toolbar & marking menu to get the circle in a more ideal viewing position. Use the commands on the toolbar & marking menu to reposition the canvas so we can get a good look at the circle prior to shading.

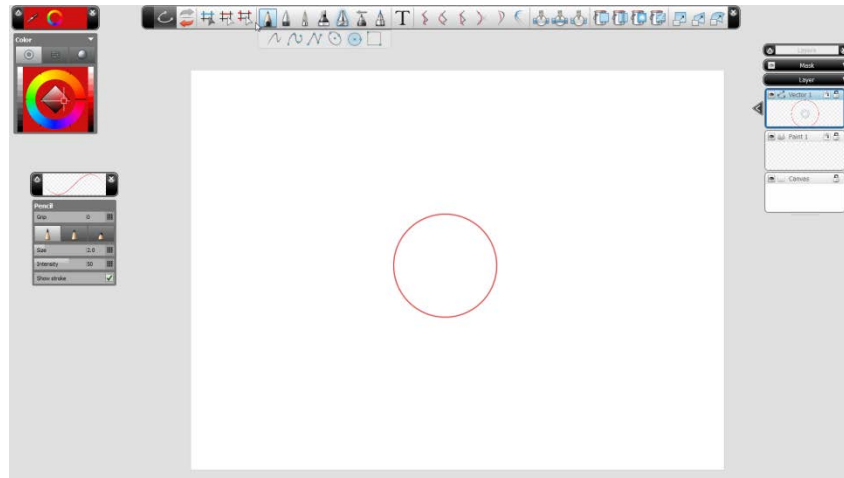


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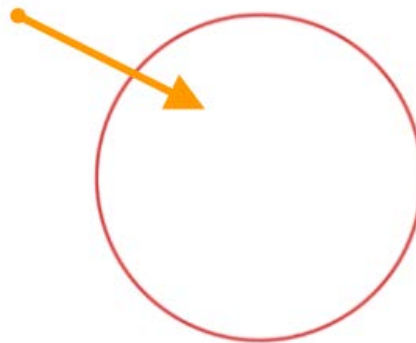
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8. Now that we have the location, color and size for the circle finalized, lets start to shade the circle to give it some 3D characteristics.



9. The first thing to decide when adding shading to an object is the determination of the light path that will be heading towards the object. For this example we will use the upper left corner as the path the light will travel when it hits the object.



The area where the light source theritcaly hits the object is consider the “hot spot” or the area where the lightest color of the shading will appear.

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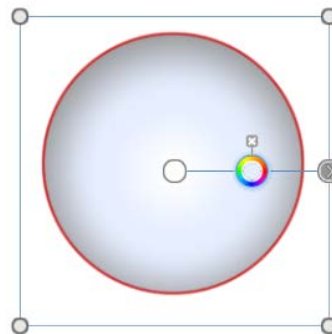
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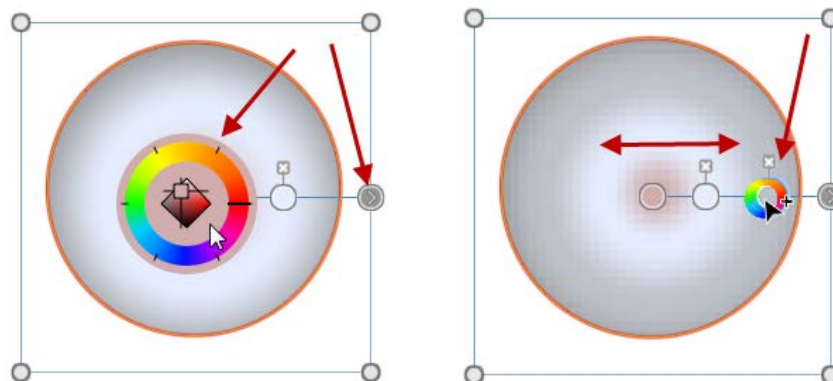
10. One of the great features in the vector tool bar is the tool vector fills. These fills are much like the other vector items in the fact they can be modified after they have been applied. You can also play with the colors in a real time environment in order to get the perfect look. Furthur more you can adjust the perimeter of the vector fill with out disrubuting the filled area.
11. To generate a vector fill select from one of the fill types solid, gradient radial or texture. To generate the shading for the sphere a radial fill will work best.



12. Your icon will change to a paint can, click the area you would like to fill then press enter.



13. Once you have filled the area. You can now go back and edit it to get the perfect look for the shading. This is accomplished by using the select vector item and tagging the fill. You can now change the start and end colors. Click the color circles on the fill and the color wheel will pop up allowing you to select the ideal color. You can also add or remove more color circles to the fill by simpling clicking on the color fill line. Dragging the color circles along color fill line will vary the start and end points of each color.

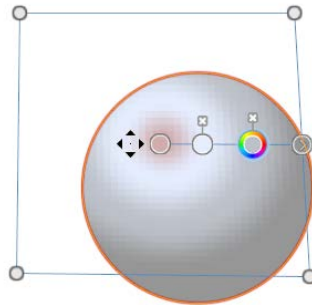


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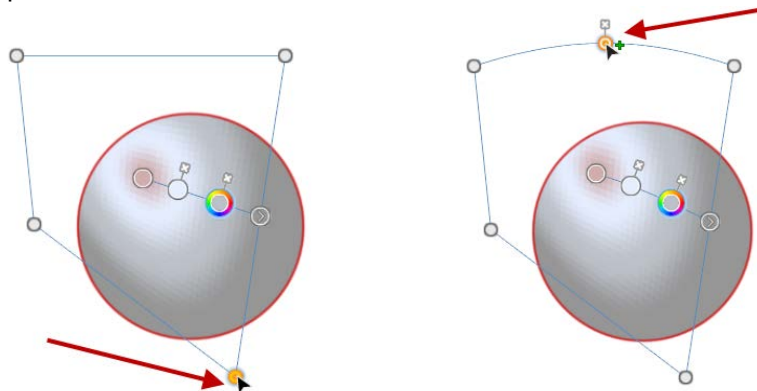
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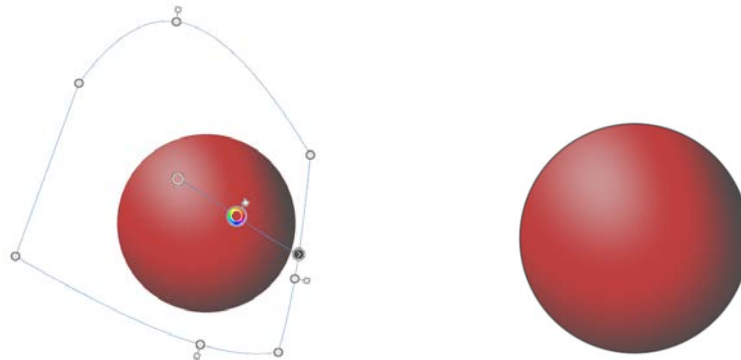
14. You can also drag the fill to a new start location by hovering over the center and holding down the left mouse once the pan icon is present. This will allow you to put the hot spot in the correct location.



15. Once you have the hot spot or the center of the radial fill in the ideal location you can also distort the perimeter of the fill to get different effects. Simply click on one of the control points and hold the left mouse button down and drag the point to the new location. Adding more control points to the perimeter can also be done by simply clicking the point on the perimeter where you desire a new control point.



16. Experiment with different perimeter shapes and colors on the fill line until you get the ideal shading that creates a nice light color shade for the hot spot and transitions smoothly into a very dark color shade on the opposite corner / edge of the hot spot.

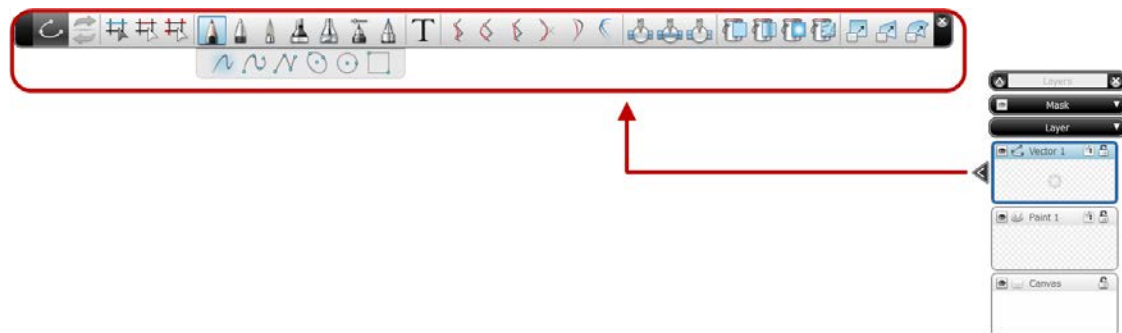


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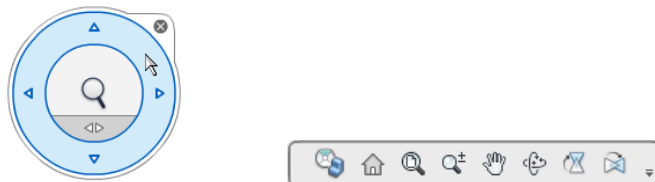
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2.2 Box Shape Instructions

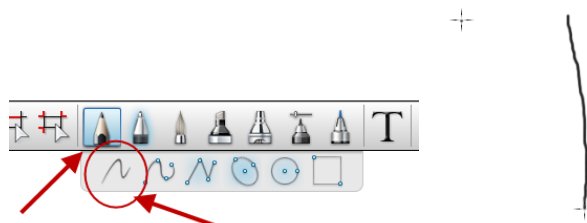
1. In order to create a box / cube that has a 3D appearance we will need to take advantage of even more of the vector tools in SketchBook.
2. Let's start a vector layer and its tool bar again.



3. For this project we are also going to use some sketch / construction lines, so let's use the canvas manipulator tools to position the canvas in a manner where we can get a good look at the overall canvas.



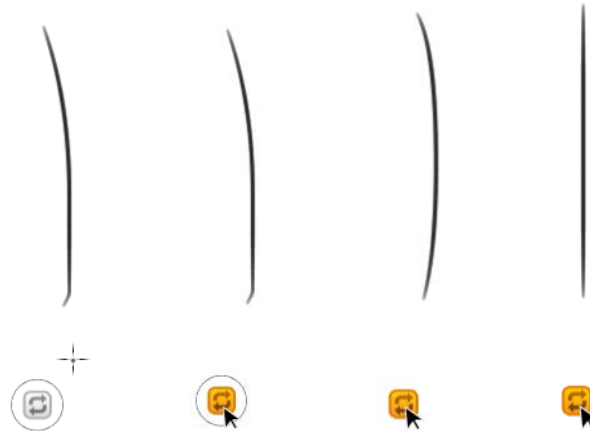
4. We first start off by drawing the front edge of the box. Let's go over to the vector tool bar and select the pencil drawing tool. We will then click the free form icon on the toolbar fly out menu. This allows sketching of lines much like a standard pencil on paper. Simply move the icon to the start position on the canvas. Press and hold the left mouse button and drag the mouse. Release the mouse button when the sketch line is complete.



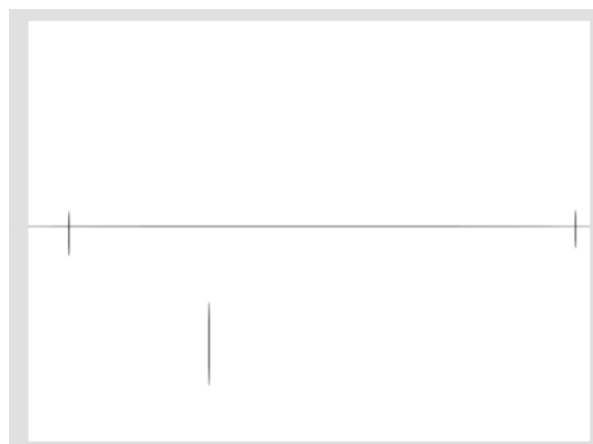
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5. Since we are in a vector layer and workflow, you will notice that an icon appears after sketching a line using the free form vector tool. This icon allows the software to calculate the type of line you were trying to sketch. So if you were trying to draw a straight line down and it first looked very jagging simply pressing the icon will turn it into a straight line or pressing it again will turn it into a slight curve. This is a very powerful function of the vector work flow. It also greatly helps when working with a standard mouse versus a pen based tablet.



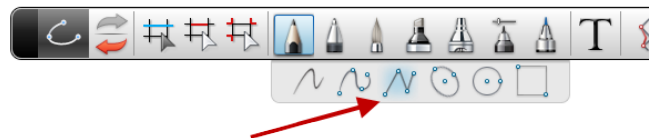
6. Experiment with the free form sketch tool to get a feel for how your mouse movements affect the kind of lines you draw. It may even help to turn up or down the speed of your mouse. Try using quick motions with the mouse like if you were using a pencil.
7. Ok, let's now sketch in what is considered the horizon line or the vertical location of the vanishing points. Go ahead and use the free form sketch tool and get a straight line down for the horizon line.
8. You can also draw two small vertical lines thru the horizon line. These will be where the vanishing lines intersect with the horizon creating the vanishing points.



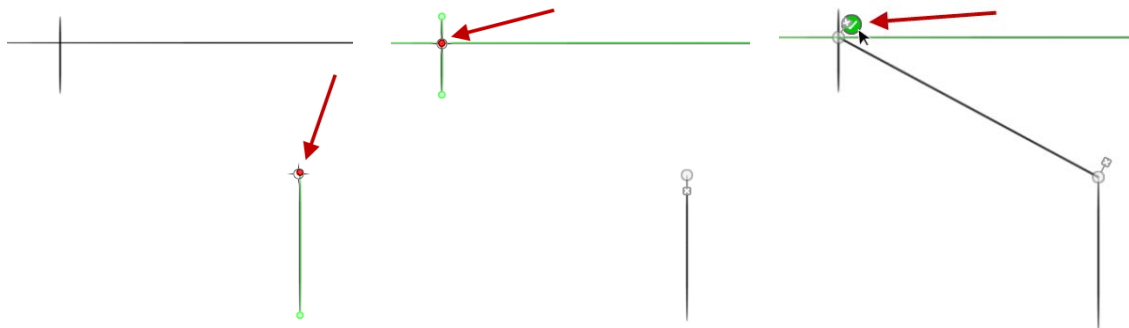
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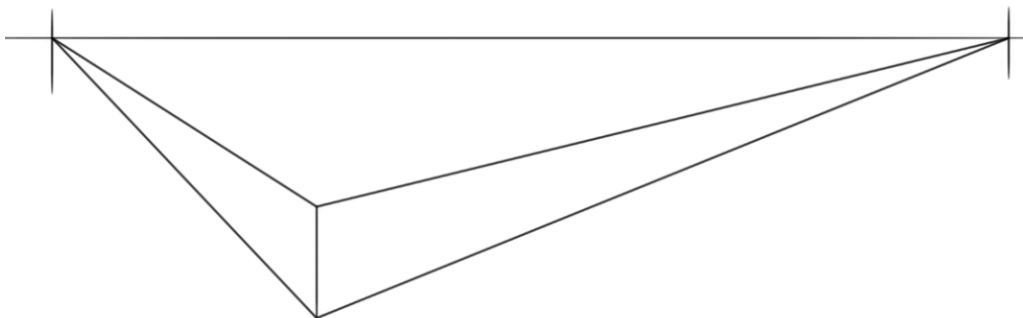
9. In order to draw the edges of the box we will use another vector tool off the fly out menu. This is a tool that allows you to sketch lines from a point to a point or even multiply points. Simply click the first point you want to start at on the canvas then tag the next point. A check icon will appear. By pressing it a line will be created thru those points.



10. Begin by tagging the end point of the front edge of the box. You will notice that the point turns red when you are on the end point. Then, click the next point on the vanishing point and create a line. Pressing the check box will stop the point to point line command



11. Go ahead and draw in the edges for both sides of the box.

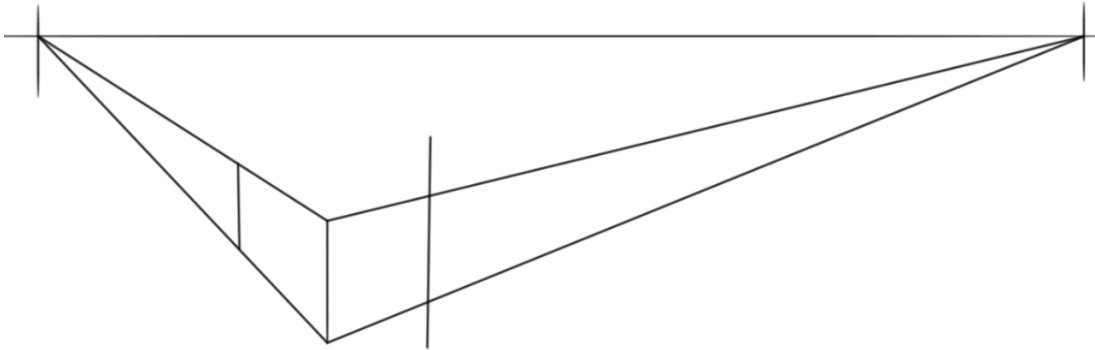


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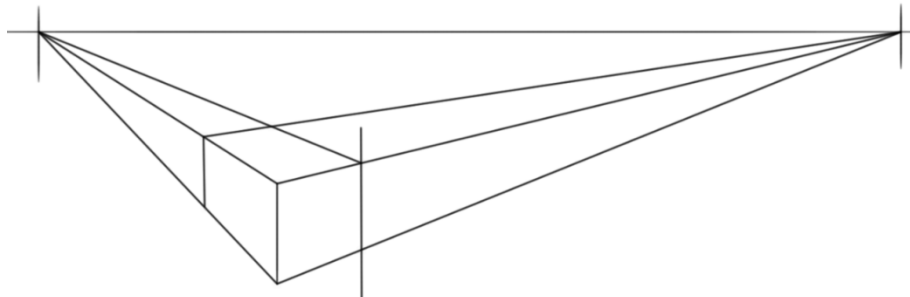
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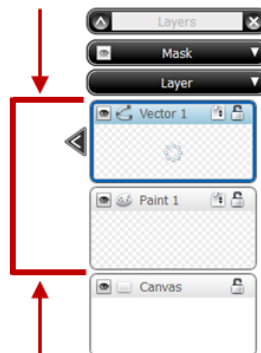
12. We can now go ahead and draw in the back edges of the box. You can do this by using the point to point line command or even the free form sketching tool. Do not worry if the lines go past the bottom and top edges of the box.



13. In order to create the top back edges we need to connect the top corners to vanishing points. Go ahead and use the point to point line command.



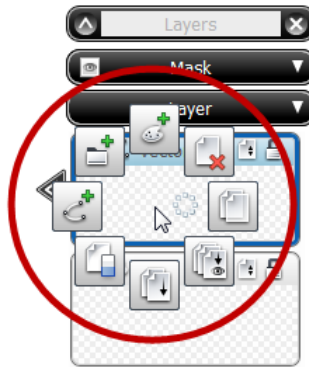
14. Now that the construction lines have developed a nice box outline shape it is a good habit to save them and start a new layer prior to cleaning up the outline. To leave these construction lines intact and begin using them on a new layer, we can use the duplicate / copy layer command. Under the layer management are you will see what is called the layer list:



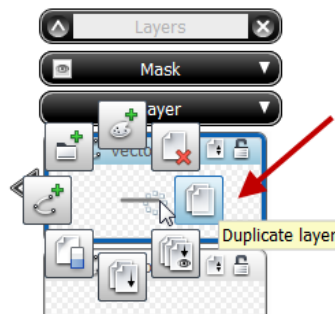
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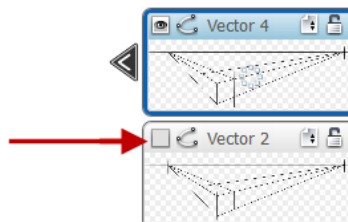
15. By hovering over the active layer, then pressing and holding down the left mouse button you activate the layer management marking menu.



16. With the left mouse button still depressed simply drag out and over to the duplicate layer icon / command. Then release the left mouse button.



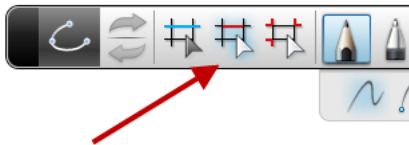
17. You will then see that a new layer has been created and it contains all the same information from the layer you copied / duplicated.
18. Since we have the construction or work lines saved on another layer, let's go ahead and turn that layer off by toggling the layer visibility icon.



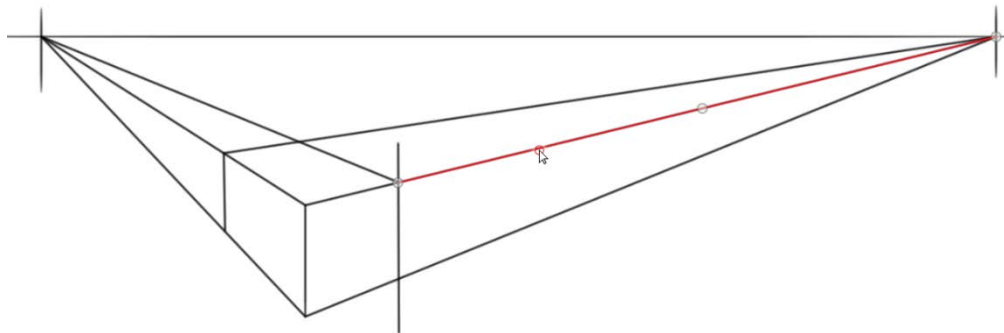
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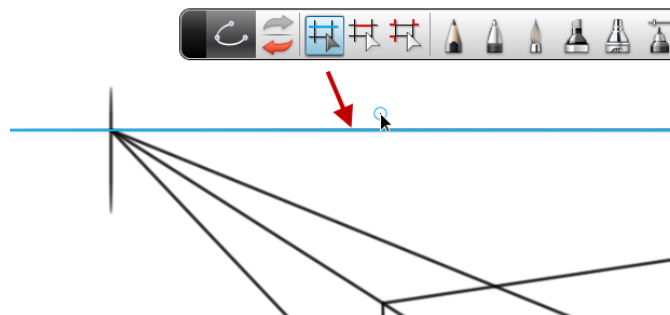
19. To get these sketch lines to start looking like a 3d box we will need to trim / erase the extra portions of the lines. SketchBook allows you to trim vector lines to the points where two vector items intersect. The trimming tools are available on the vector toolbar. Let's activate the trim between two vector items command.



20. You can now click on the sections of the line you wish to delete. That portion of the line will turn into a dashed red line when hovered over, then a solid redline when clicked. Simply press the delete key and the portion is removed. Continue removing the unwanted line portions until you get the box outline.



21. You can also use the select vector item tool and delete an entire item at once. Active the item and press the delete key.

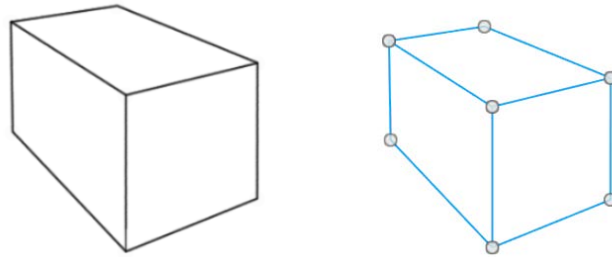


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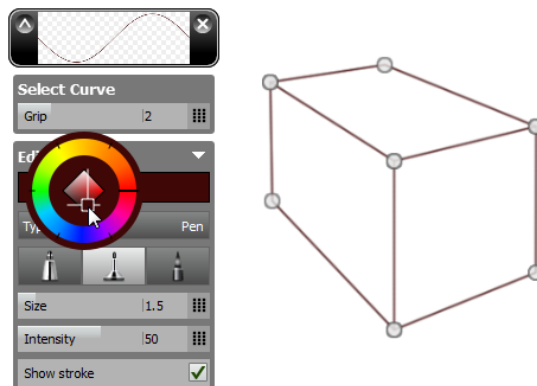
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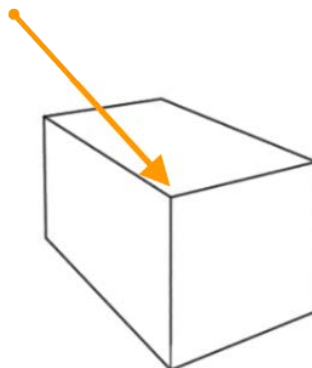
22. Once you have cleaned up all the extra lines you are left with the box outline. Select all the box outline lines by using the select vector item tool. You can do this by doing a window select or holding down the shift key as you select items.



23. Let's go ahead and change these lines to a red color. Also let's change to the tool they were created with to a pen. Use the tool style editor and change the lines to a format that will work with the shading a give some nice edges.



24. Add some shading to the object to give that 3D appearance. We can accomplish this by determining the path that light will follow when it contacts the objects. For this box we will assume it contacts the front corner of the box. This corner will become the "hot spot" or the lightest color in the shading.



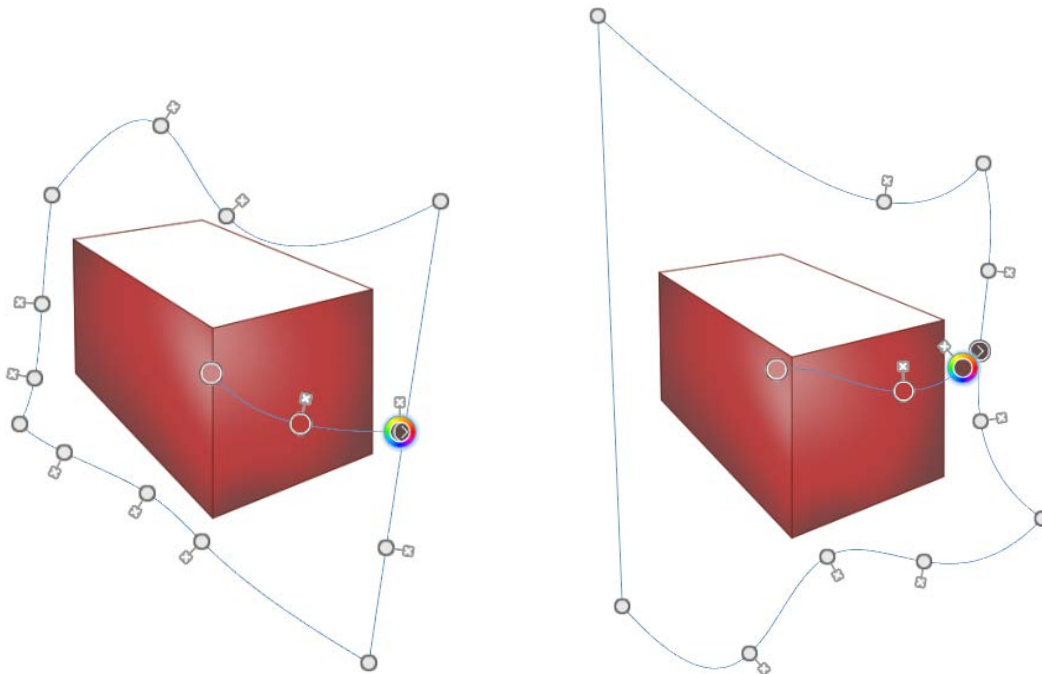
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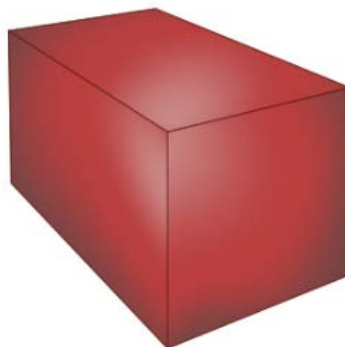
25. Using the vector fill tools again we can begin to shade the box.



26. Once again, experiment with different perimeter shapes and color fill lines. Create shadowing that will work from a nice light color by the hot spot back to dark corner along the back and side edges.



27. Repeat the fill command for all sides of the box to create a nicely shaded 3D box shape.

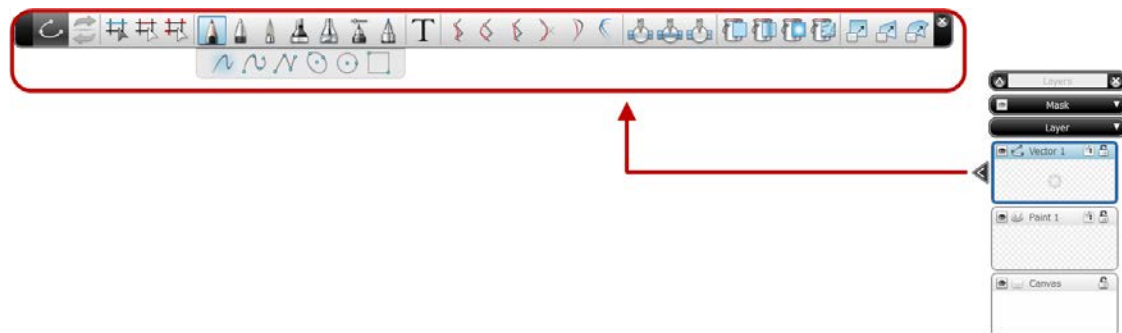


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2.3 Cylinder Shape Instructions

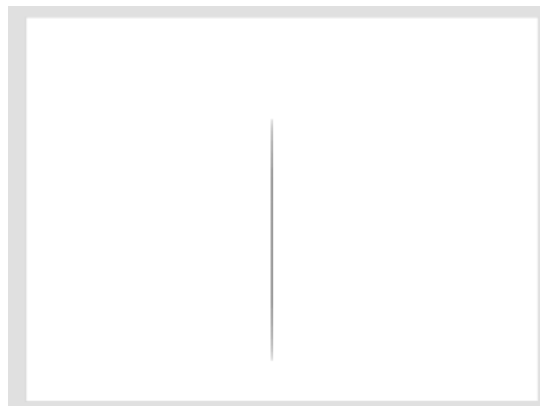
1. Creating a cylinder that has a 3D appearance can be achieved by using many of the previously described techniques and tools in SketchBook.
2. Begin by activating a vector layer and its tool bar.



3. For this exercise we are also going to use some sketch / construction lines, so let's use the canvas manipulator tools to position the canvas in a manner where we can get a good look at the overall canvas.



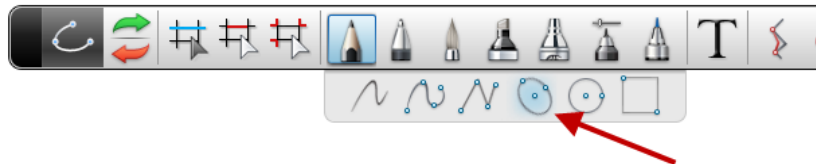
4. Create a straight vertical line down that represents the center line of the cylinder. This will be used as a visual guide during the cylinder creation.



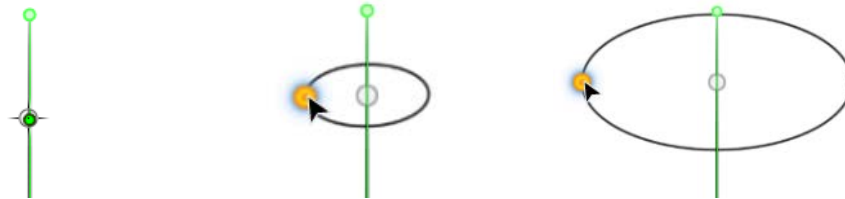
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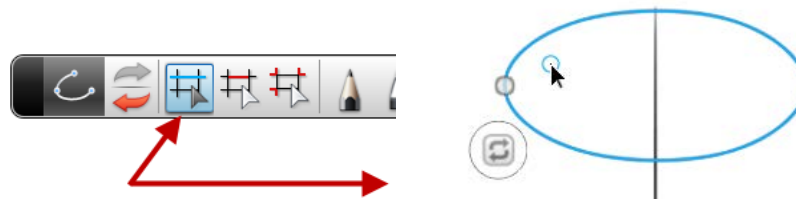
- For this shape we will use the default standard lead pencil. We will then tag the ellipse icon on the tool bar fly out.



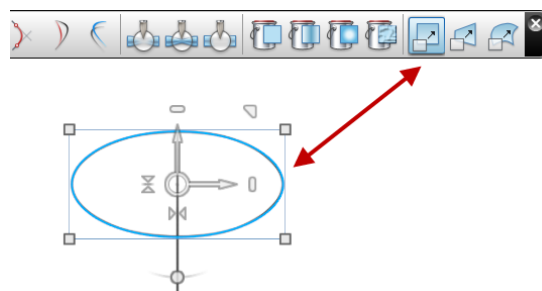
- We will then click the center point of ellipse on the construction center line. Continue pressing the left mouse button and drag the pointer outwards to change the size of the ellipse. Once the desired ellipse size is achieved simply release the left mouse button and the ellipse is created.



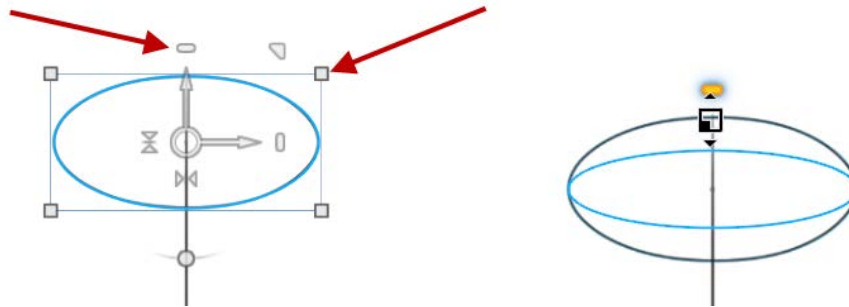
- We can modify the shape and height of the ellipse after it has been created by using the vector item select tool and selecting the ellipse.



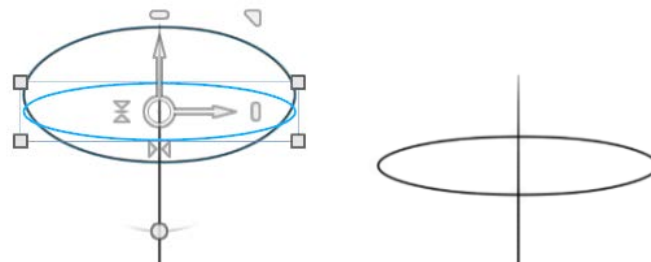
- To manipulate the shape / height of the ellipse after it has been created you can use one of the vector transform tools from the tool bar. Let's use the move and scale tool.



9. Once you have the move & scale tool icon present you can tag and grab various features of the ellipse and modify the ellipse look. Clicking and dragging the corner control grip will change the overall size of ellipse in both directions. In order to get the ellipse a shorter height and the same width click and drag the upper center vertical grip.



10. Once you have the ideal ellipse shape simply release the left mouse button. The move & scale icon will reappear. Then press the enter key and the effects will take place to the ellipse.



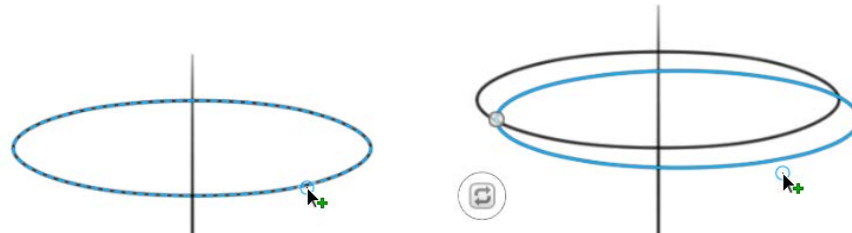
11. You can also duplicate vector items. This command can be used to create the lower portion of the cylinder. Activate the duplicate curve command off the vector tool bar.



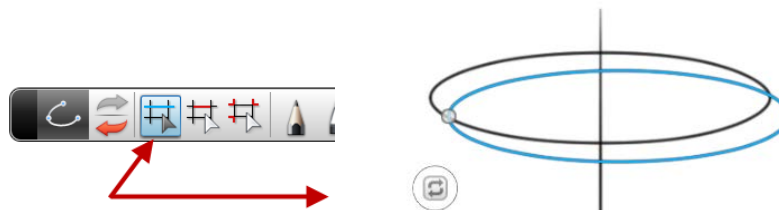
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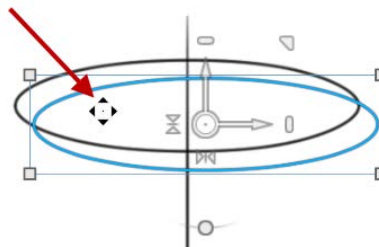
12. Then simply click the item you would like to duplicate. A copy of the item is placed next to the original item.



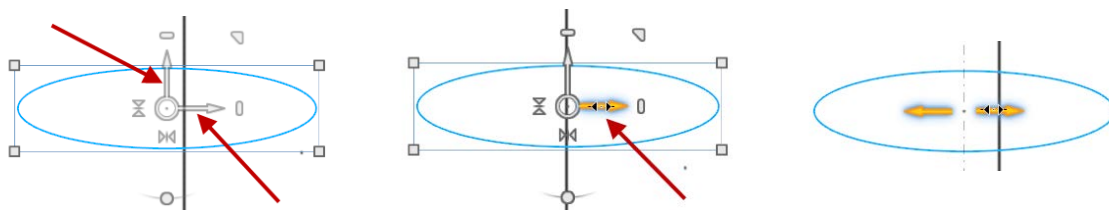
13. To reposition this second ellipse to the lower portion of the cylinder simple select by using the vector item select tool.



14. Then activate the move & scale item command. Once you see the move & scale icon appear you can hover over a spot inside item selection until you see the move arrow icon appear.



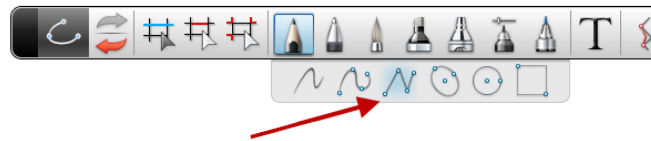
15. Simply press and hold the left mouse and drag the ellipse to the center construction line creating the lower portion of the cylinder. To gain more precise control of the move you can use the move arrows on the icon. Simply move the cursor and hover over one of the move arrows, then press and hold the left mouse and drag. Once you begin to drag you will notice you can only move along the axis of the arrow. Also a dashed line appears representing the center point.



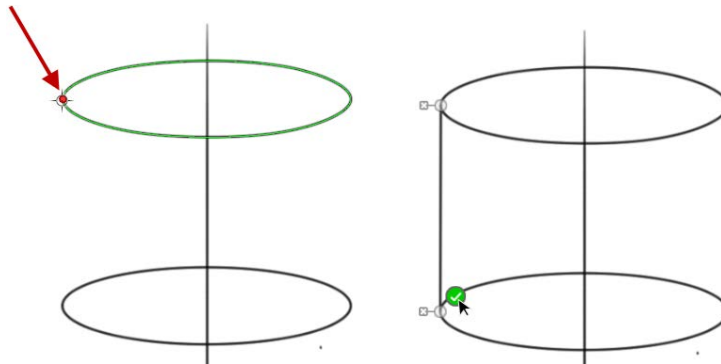
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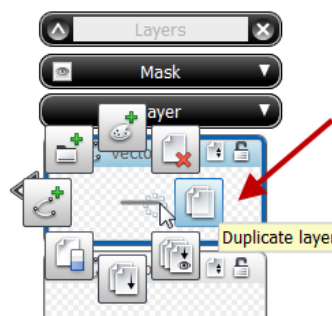
16. Use the vector tool point to point line tool to create the sides of the cylinder.



17. Pick the ends of the ellipse. Simply press the left mouse button and place the point then once you are in spot that would represent the side's intersection point. Once you have the points selected on the top and bottom ellipse press the check icon, the line will then be created.



18. Go ahead and duplicate this layer so we have the construction geometry for later if needed. Using multiply layers is an excellent workflow to get into the habit of using.



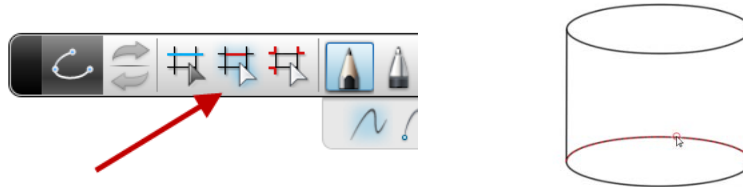
19. Since we have the construction or work lines saved on another layer, let's go ahead and turn that layer off by toggling the layer visibility icon.

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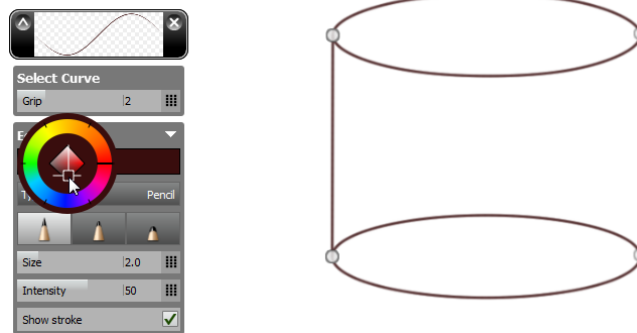
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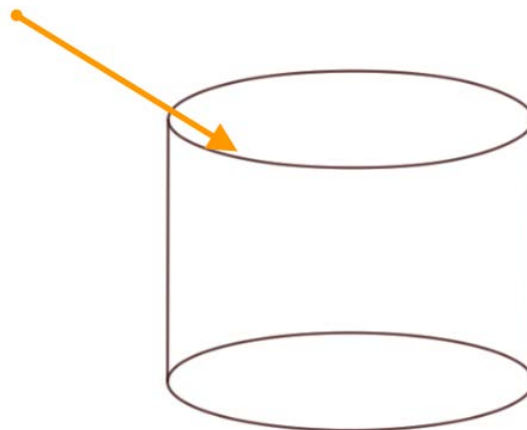
20. Go ahead and use the trim vector tools to clean up the outline of the cylinder. You can also use the selector vector item tool and delete the center construction line.



21. You can also change the style and color of the outline lines as we have done in the past exercises.



22. Ok, let's apply some shading to the cylinder to gain that 3D appearance. Determine the light source as we have done before.



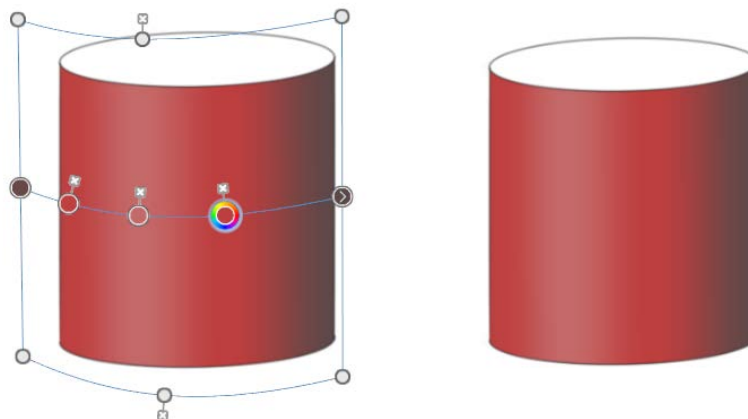
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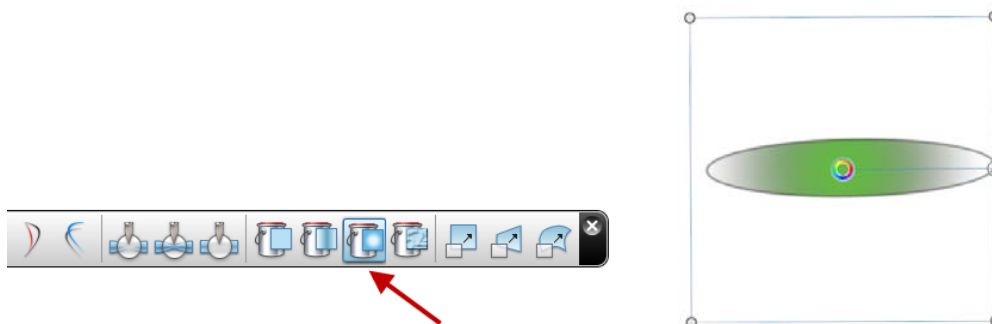
23. Since the cylinder is round and tall. We can use a vector gradient fill for this object to get the light to dark shading for the cylinder side.



24. Fill the side of the cylinder using the vector fill. Experiment with the perimeter for the fill and color fill line as we have done in the past.



25. Go ahead and switch over to a radial fill and fill in the top portion of the cylinder.

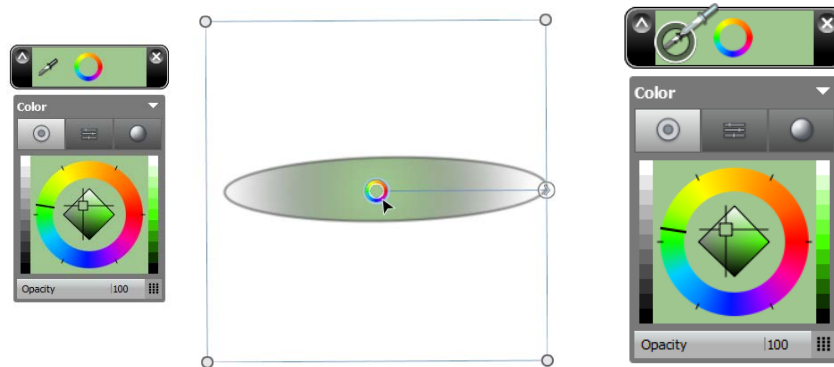


26. Suppose you switched colors prior to completing the top fill for the cylinder. To get the look for the cylinder correct the top vector fill will need to have same shading colors as the side.

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27. A great feature inside SketchBook is the ability to select an existing color and use it in another command. In order to get the fill for the cylinder correct, we can use the eyedropper feature from the color select menu. Once you have tagged and activated the color you wish to change from the color fill line, simply go tag the eyedropper icon.



28. Then drag the eye dropper over the color you wish to duplicate and press the left mouse button. You will notice your fill color has changed to this exact same color.



29. Go ahead and experiment with the cylinders top fill perimeter and color line until you get the ideal shading for the top.

