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Seth Thomas No. 2 Regulator Wall Clock

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This tutorial will be presented in two parts: In the first part we'll create the round wood clock face (34 steps in all). The second half, in which we will create the bottom portion of the clock, will be posted on 15 August. Some experience with Xara products or vector drawing applications is recommended.

START TUTORIAL

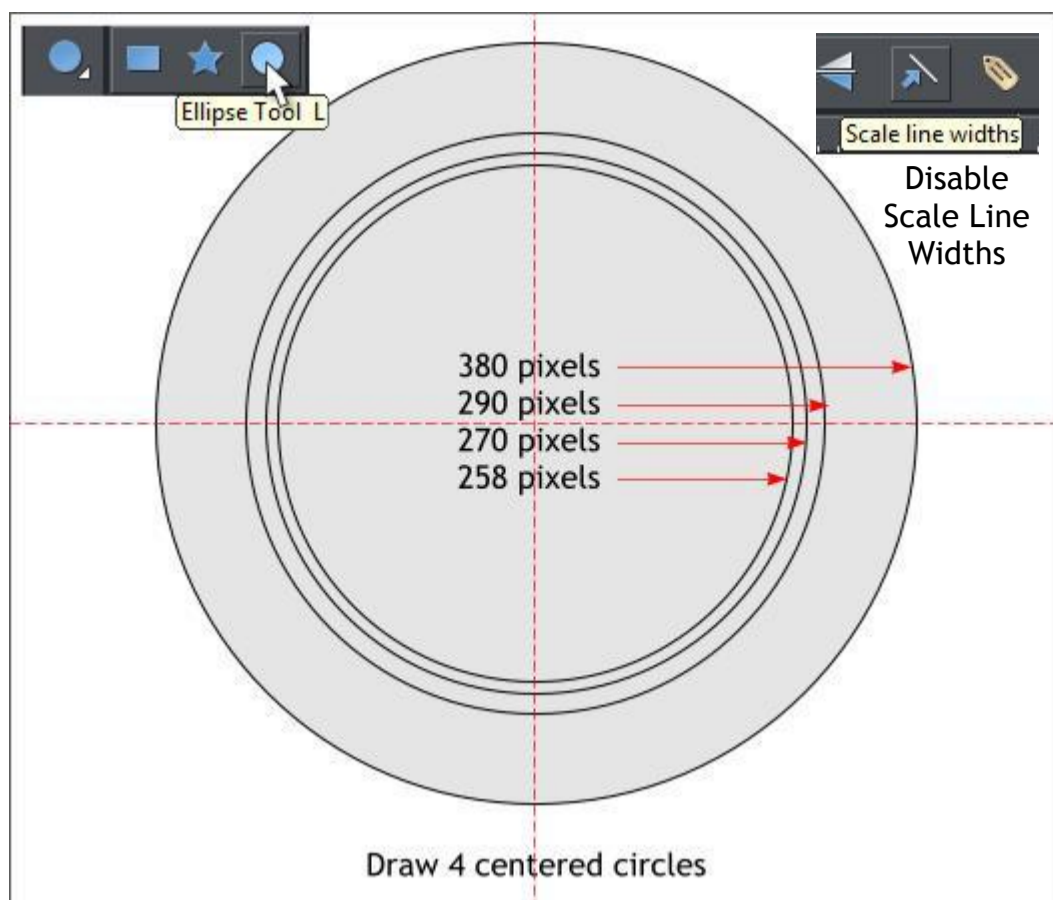
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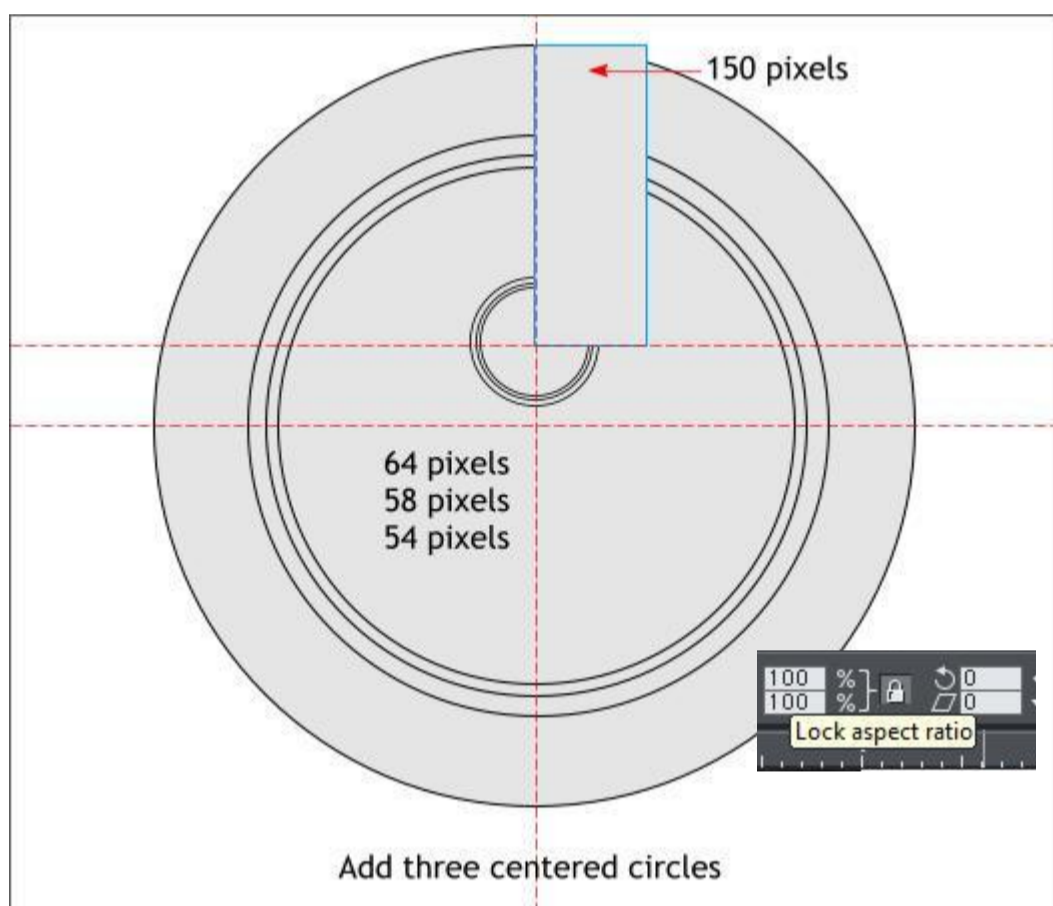
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Display the screen rulers (Ctrl L). Enable **Snap to Grid** (Window > Snap to Grid). Drag a horizontal and vertical guideline from the screen rulers onto the center of the page. Disable **Snap to Grid**.

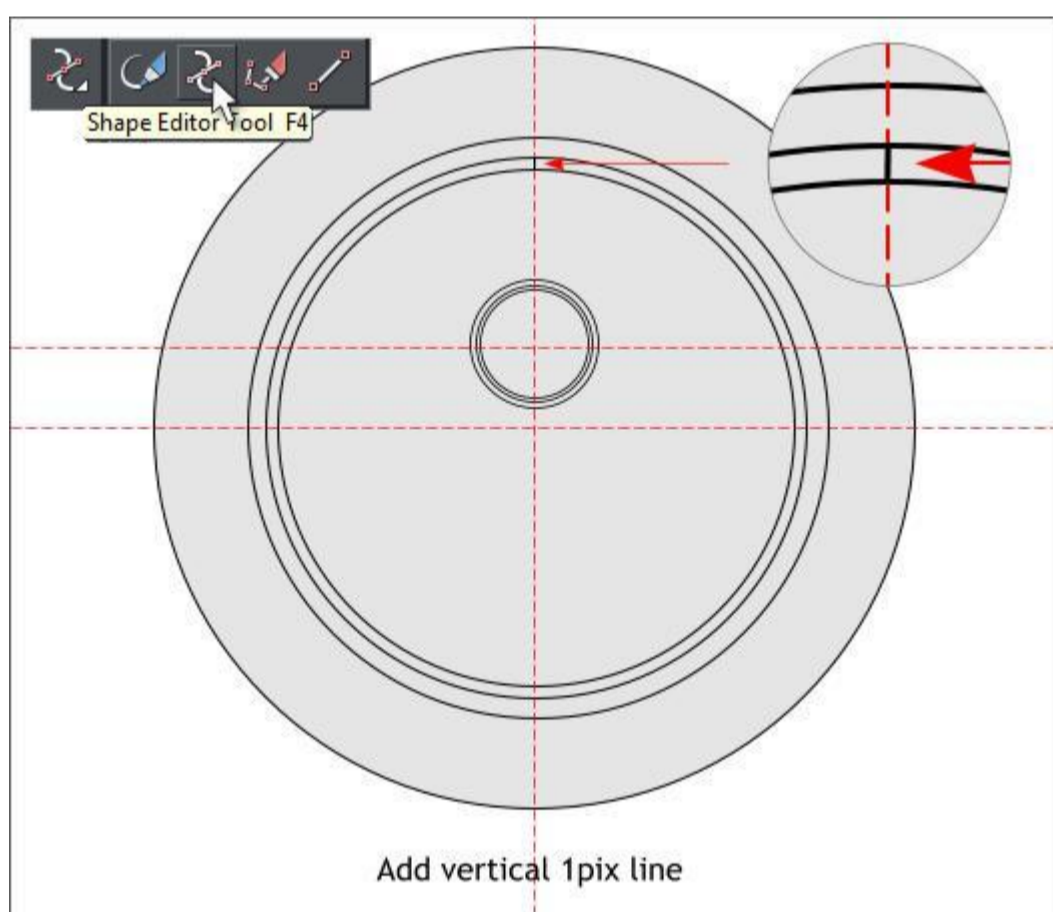
Select the **Ellipse Tool** (keyboard shortcut L). Click at the intersection of the guidelines, hold down the **Shift** key (to draw from the center) and the **Ctrl** key (to constrain the ellipse to a circle), and drag a 380 pixels circle. Set the **Width** to 1px. Disable **Scale Line Widths** (when disabled, the icon will be in the up position)

Clone the circle (Ctrl k) and change the size on the InfoBar to 290. Press **Enter** (or **Return**) to apply the change. Clone again and change the size to 270 pixels. Clone once more and reduce the size to 258px).

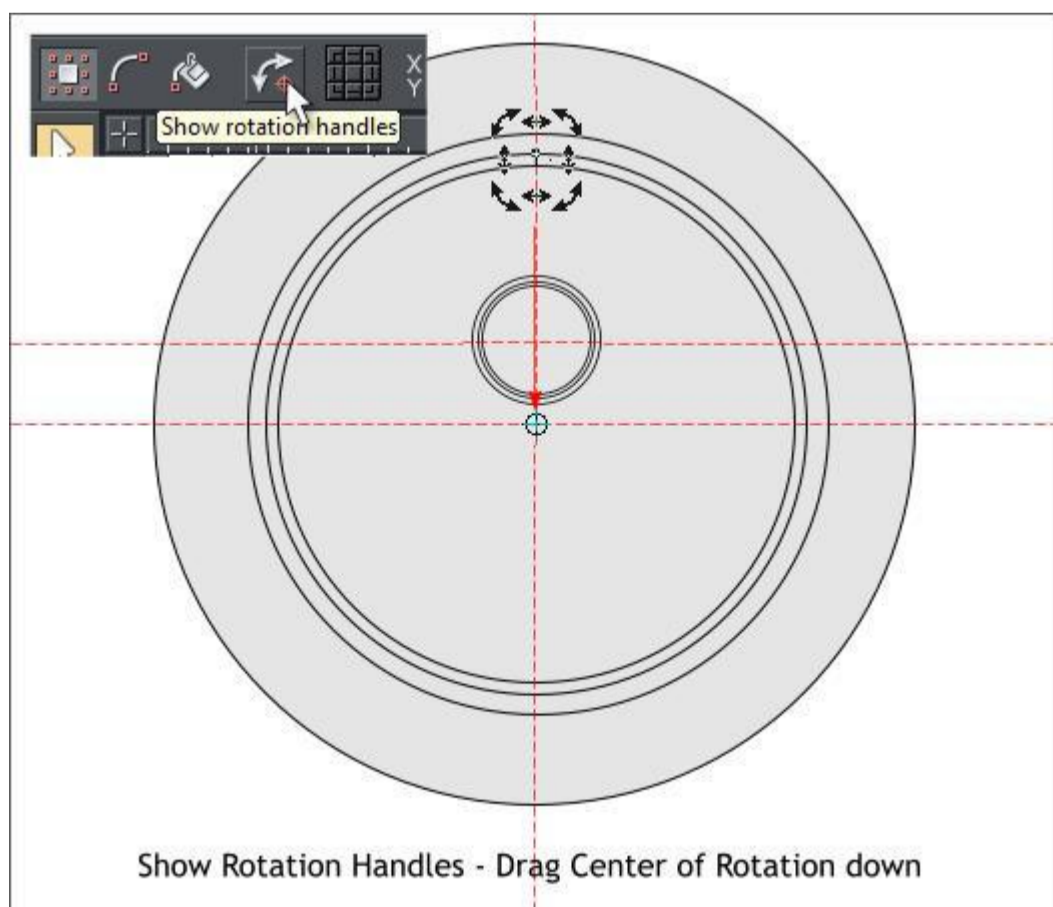


Select the **Rectangle Tool** (m) and draw a rectangle that is 150 pixels tall (the width does not matter). Use the rectangle as a guide to position a new guideline 150 pixels down from the top of the largest circle. Once you have added the guideline, delete the rectangle.

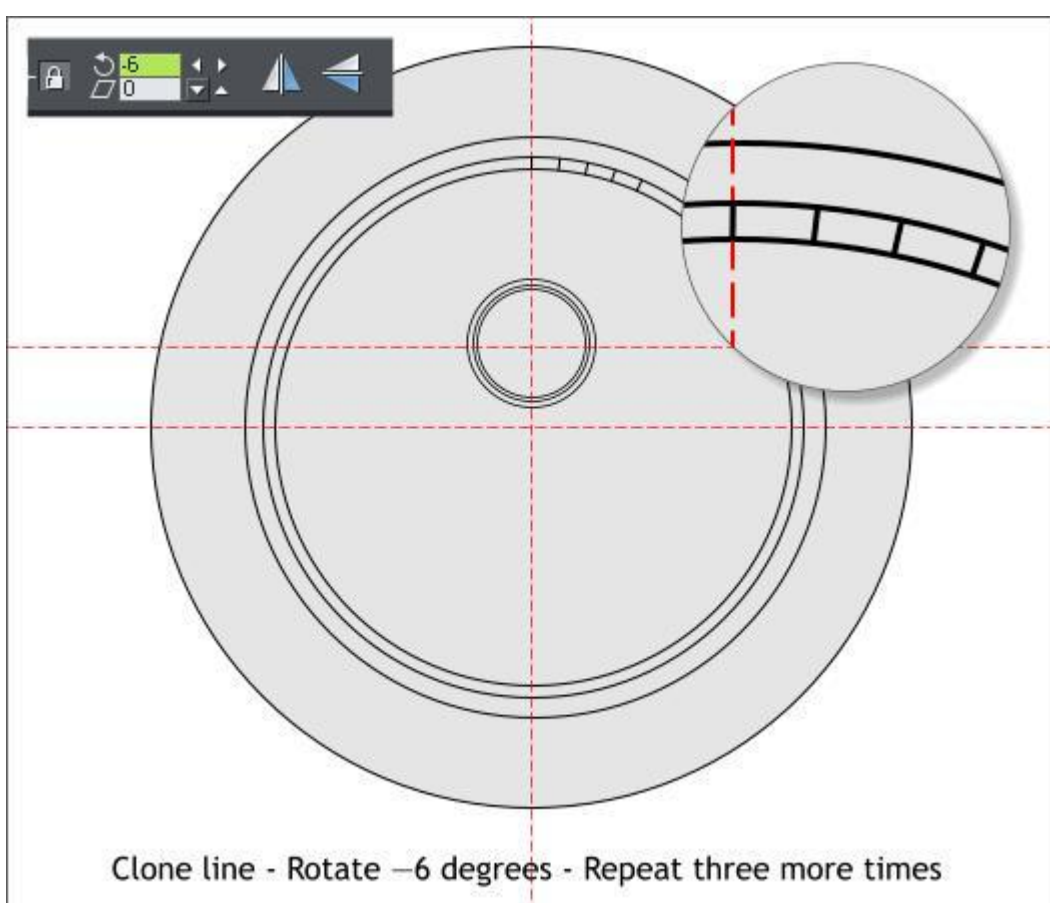
Press **3** on the keyboard to zoom to 300%. Add three centered circles to the sizes shown. Use the same technique as above to center the first circle, then clone and resize each of the smaller circles by entering the dimension in the **H** or **W** text entry box and pressing **Enter** to apply the change. (The **Lock Aspect Ratio** padlock icon should be enabled)



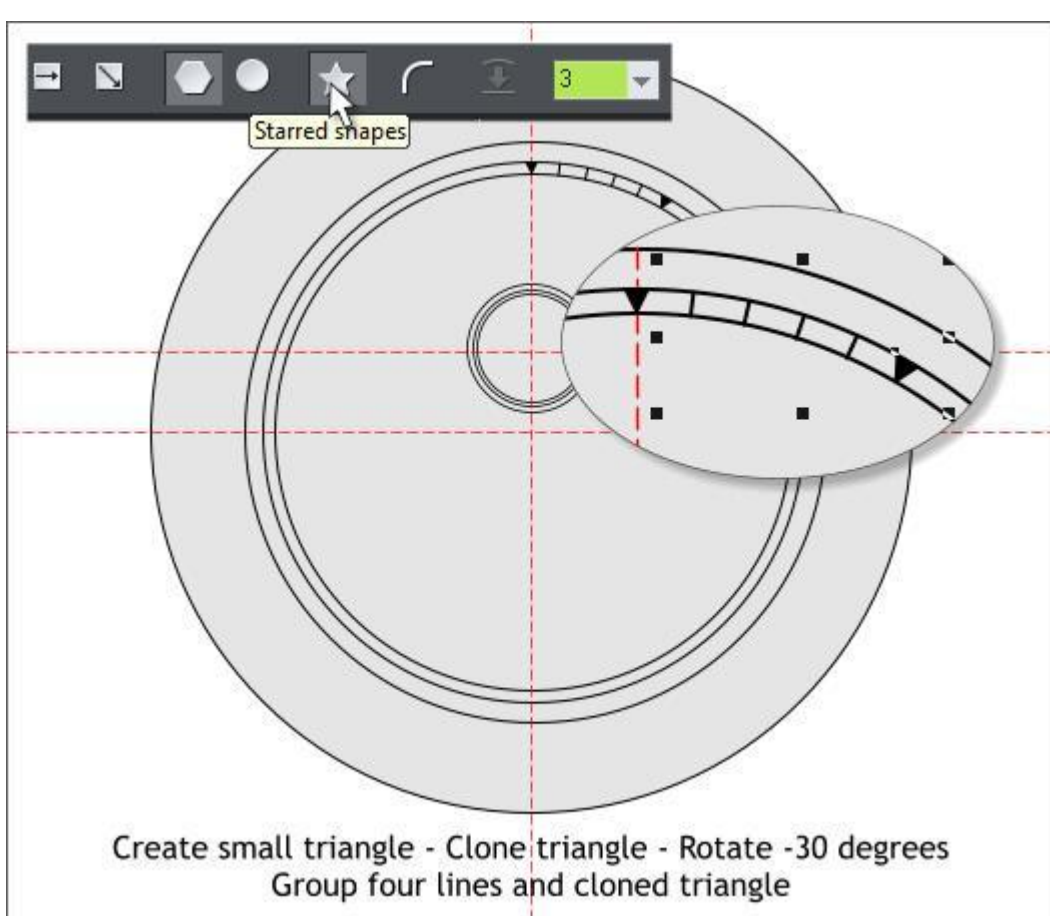
While you are still zoomed in at 300% select the **Shape Editor Tool** (F4) or the new **Straight Line Tool** (found at the far right of the drawing tools fly out menu). Draw a vertical 1px (1 pixel) line between the two circles as shown above in the enlarged view.



With the vertical line selected, click the **Show Rotation Handles** icon on the InfoBar. This displays the rotation handles/arrows and the **Center of Rotation** bulls eye. Drag the **Center of Rotation** bulls eye to the intersection of the two center guidelines. It is very important that the bulls eye be exactly centered on the two guidelines. Zoom in closer if need be and switch to **Outline View** (Window > Quality > Outlines). Switch back to **Very High Quality** when you are done.

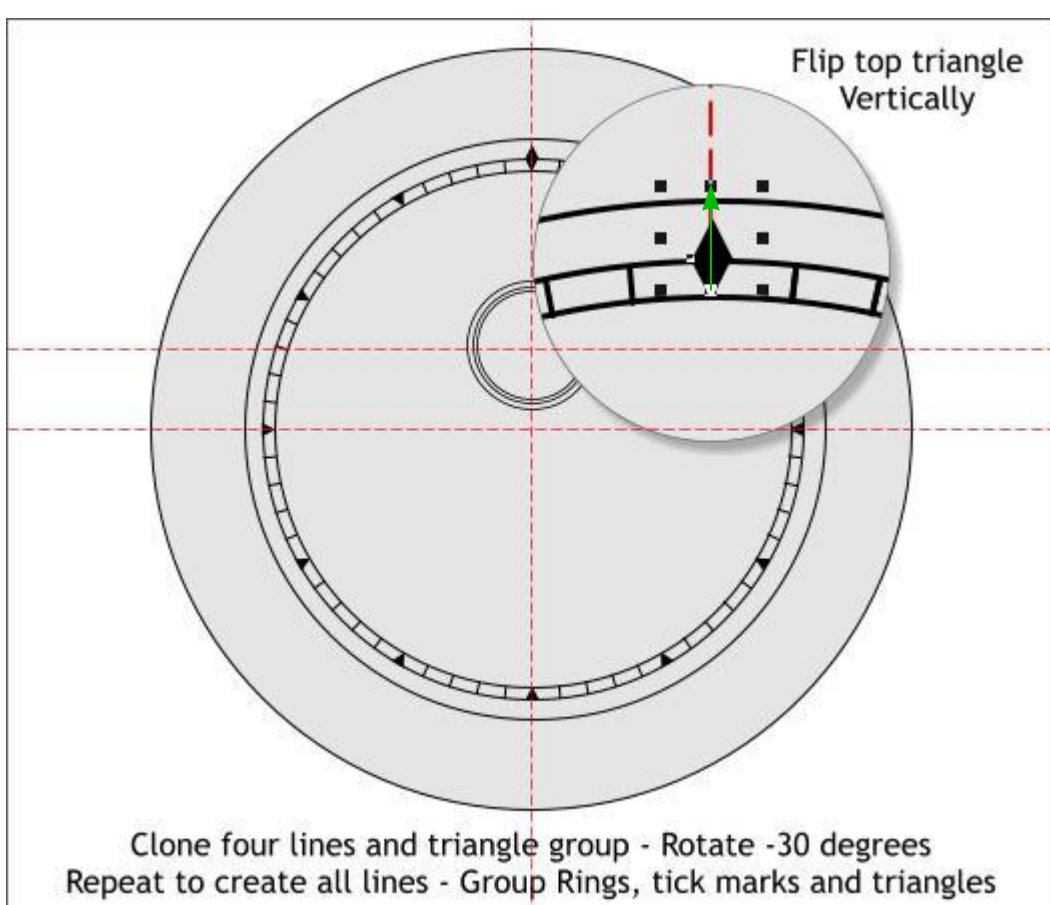
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Clone the line (Ctrl k). In the *Angle of Rotation* text entry box on the Infobar, key in -6 and press Enter to apply the rotation. Clone the line and repeat these steps to add three more tick marks. Clone each time.



Select the QuickShape Tool (Shift F2). Click the *Starred Shapes* icon on the Infobar and select 3 from the *Number of Sides* drop down list. Draw a small downward pointing triangle the height of the two lines.

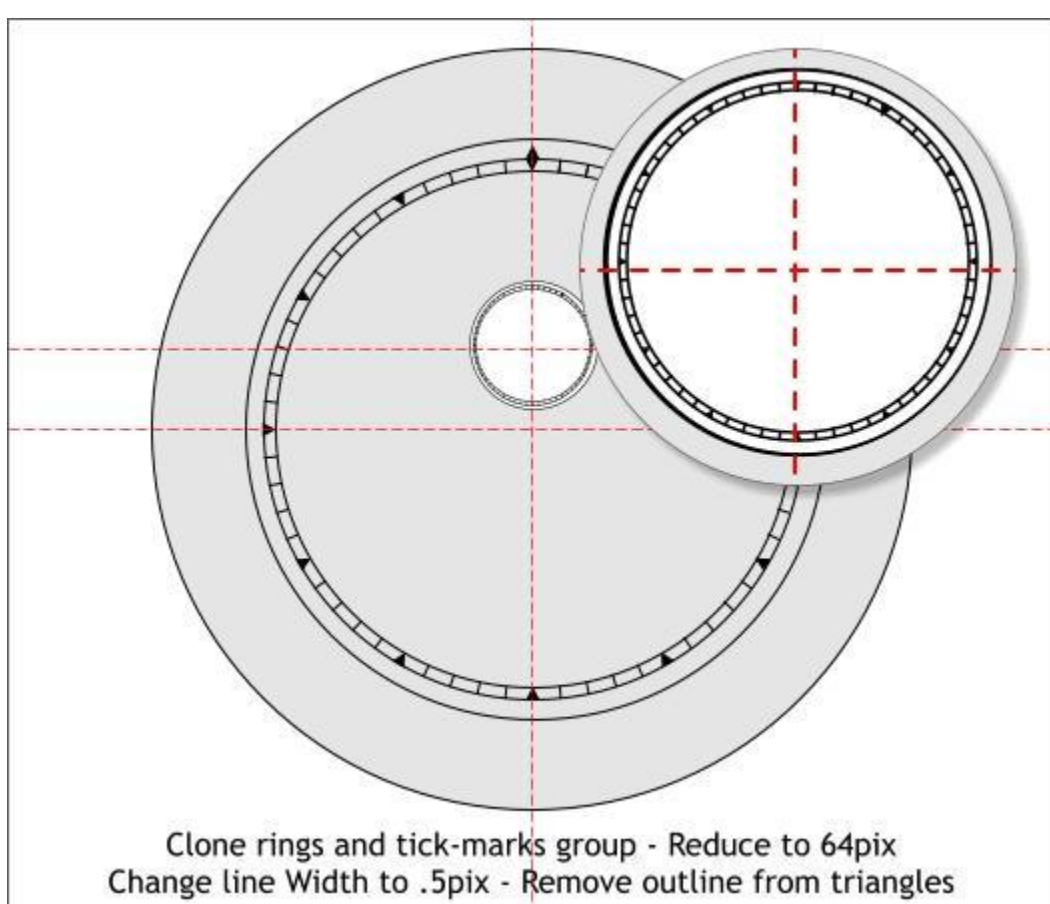
Clone the triangle, move the *Center of Rotation* bulls eye to the intersection of the two guidelines, and rotate the clone -30 degrees.



Clone the four lines and the second triangle and group them (Ctrl g) (do not add the first triangle to the group). Rotate the group -30 degrees around the center of the two guidelines. Repeat the clone and rotate step until you have added all the tick marks. A second triangle will be added right above the first triangle at the 12 o'clock position.

Hold down the Ctrl key and click on the duplicate triangle to select it. Hold down the Ctrl key and drag the bottom center control handle (the small black box) upwards until the triangle flips vertically and forms a diamond with the bottom triangle as shown above.

NOTE: Ctrl + click selects an object that is part of a group.

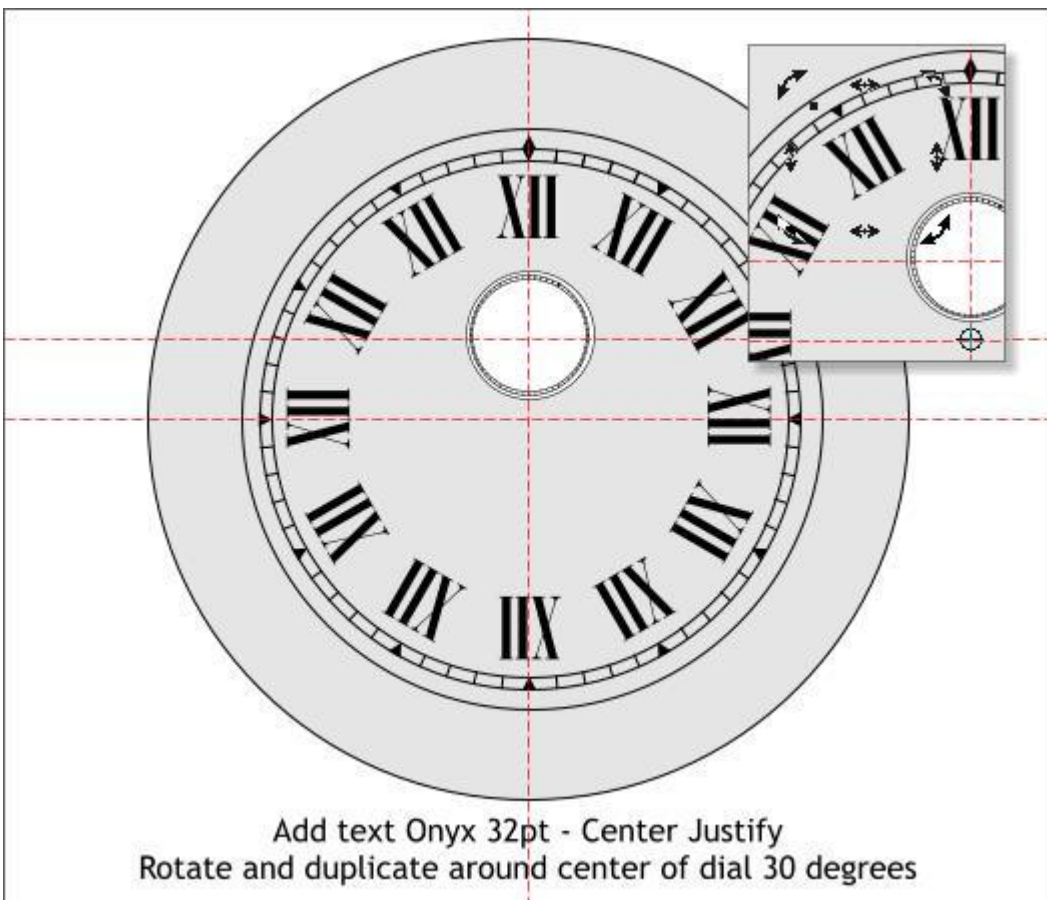


Hold down the Shift key (to select multiple objects), and select the 12 groups of tick marks/triangles and the two circles that enclose the tick marks. Group them (Ctrl g or Arrange > Group). Press Ctrl x (or Edit > Cut). This will reveal if you have missed any of the circles or lines. Press Ctrl z or Edit > Undo to undo the cut and to replace the objects. If necessary, add to the group.

I was going to have you repeat the steps to add tick marks to the small circles, when I had a brilliant thought! Why not clone the two lines and tick marks from the large circles we already have and reduce them?!

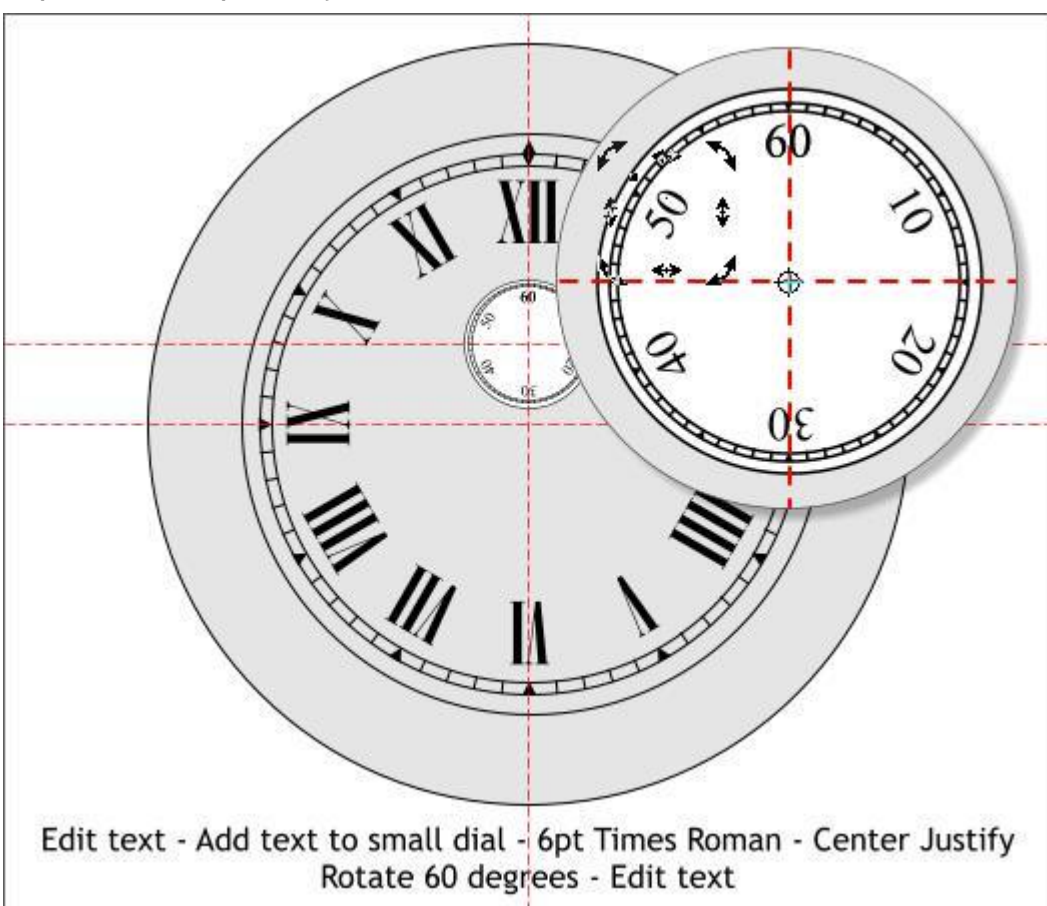
Select the circle/tick marks group. Clone the group. Ctrl click on the top triangle that points upward at the 12:00 o'clock position, delete it, and reduce the width of the group to 64 pixels. Change the outline *Width* to .5pix.

Unfortunately this also adds a outline to the triangle shapes. Ctrl click on each triangle and set the outline to none (select **None** from the *Width* drop down list on the Infobar). It's a bit of a chore, I know.

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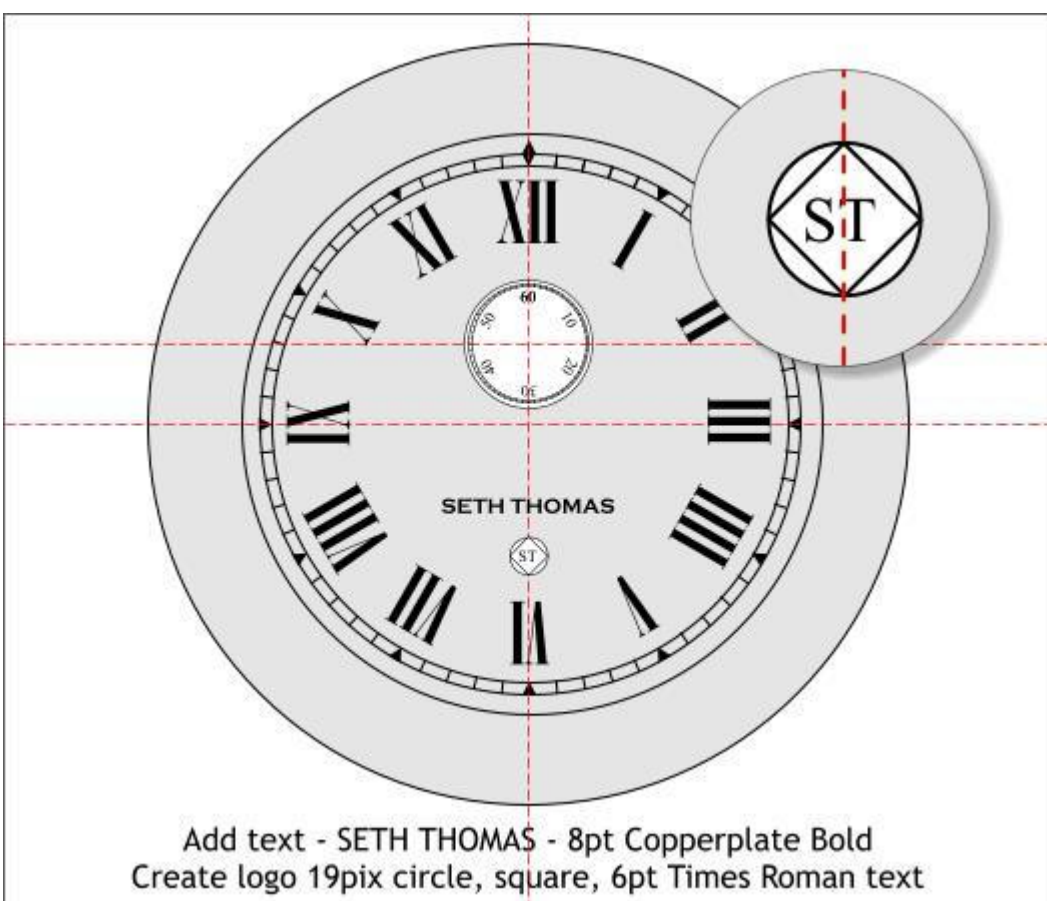
Select the **Text Tool** (t) and click on the center line under the 12:00 o'clock position. Select a condensed, serif font from the *Fonts* drop down list such as *Onyx*. Set the Size to 32pt (this may vary from font to font). Press the *Center Justify* icon on the InfoBar and key in XII (Roman Numeral for 12). [Click here](#) for a free DaFont Condensed Serif font that is appropriate for this tutorial.

Clone and rotate the text -30 degrees around the two guidelines. Repeat this step until you have 12 Roman Numerals.



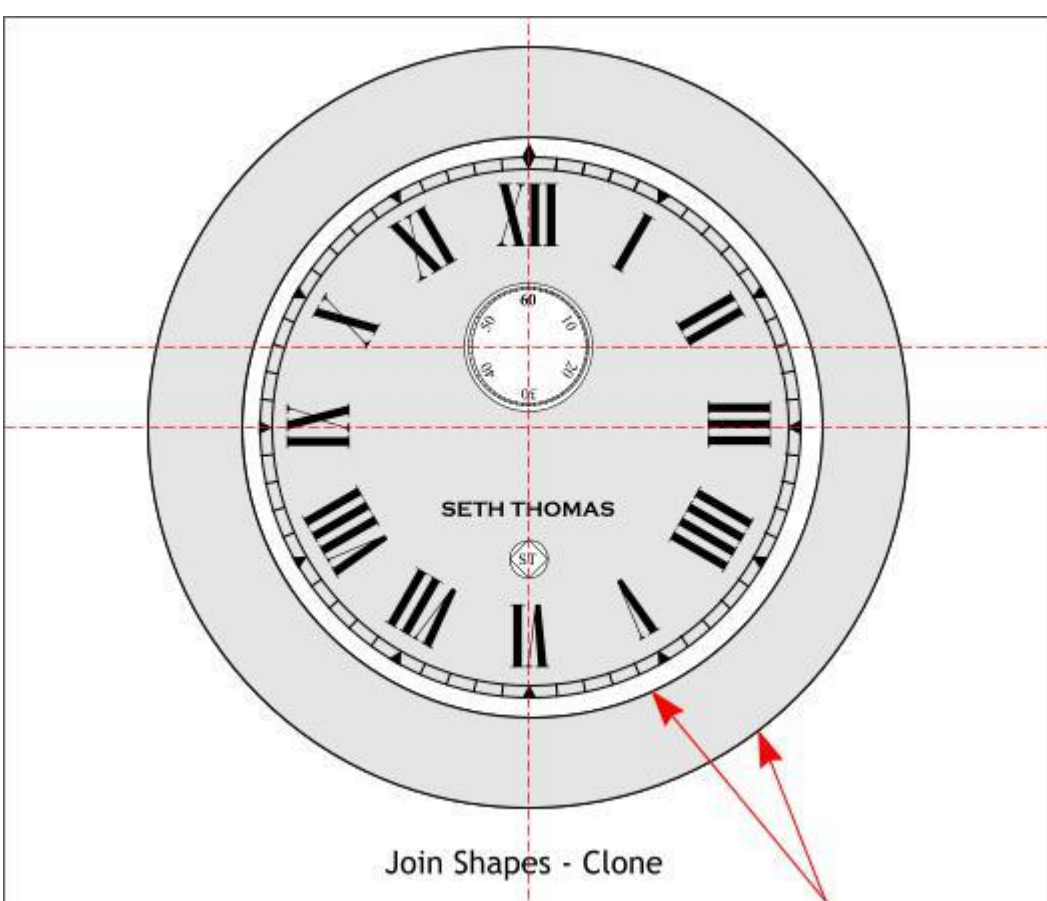
With the **Text Tool**, double click on each of the numbers (except for IV), to select the text and change the Roman Numerals accordingly. Change the IV to IIII instead. This is the convention for clocks.

Repeating these steps, add small 6pt Times Roman numerals to the small dial as shown above.



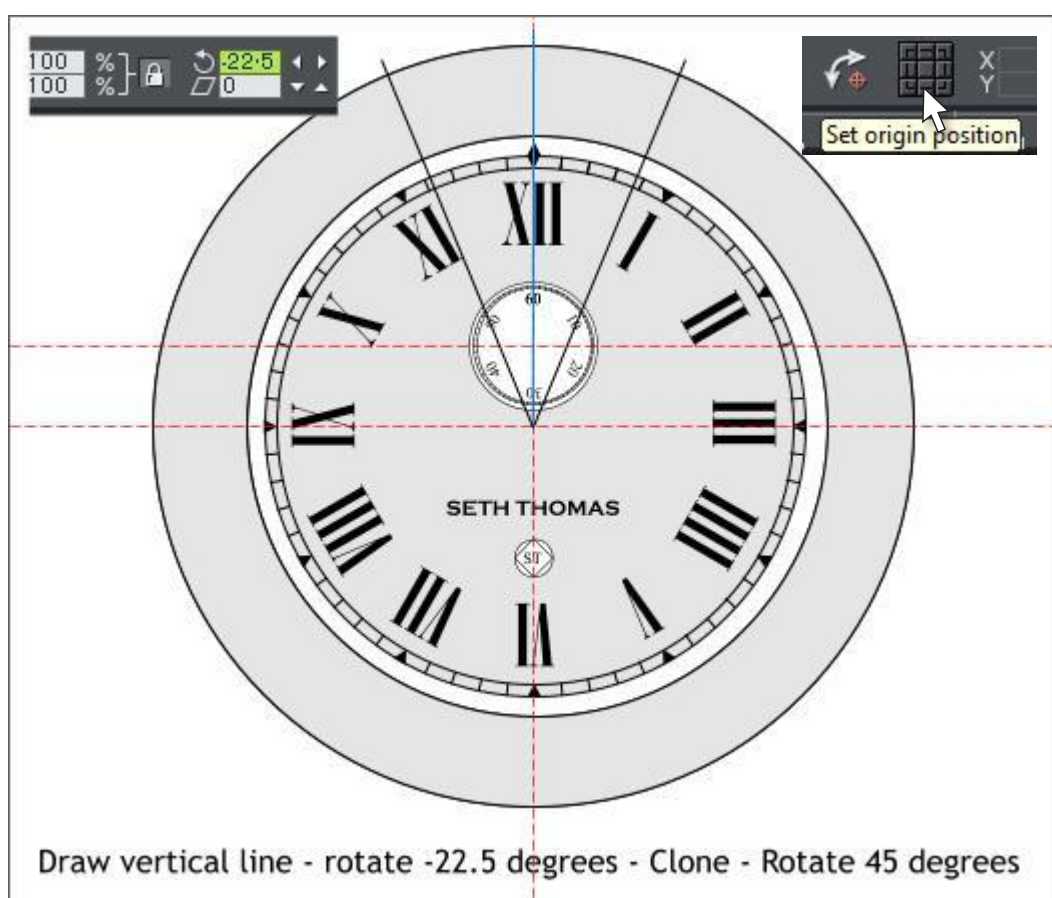
Add the manufacturer's name SETH THOMAS in small **Copperplate Bold** text, or a similar font.

Create a small 19 pixel circle and square (rotate the square 45 degrees and reduce the square to fit inside the circle). Add ST to create the Seth Thomas logo. [Click here](#) for more information about Seth Thomas, American Clockmaker 1785 – 1859).



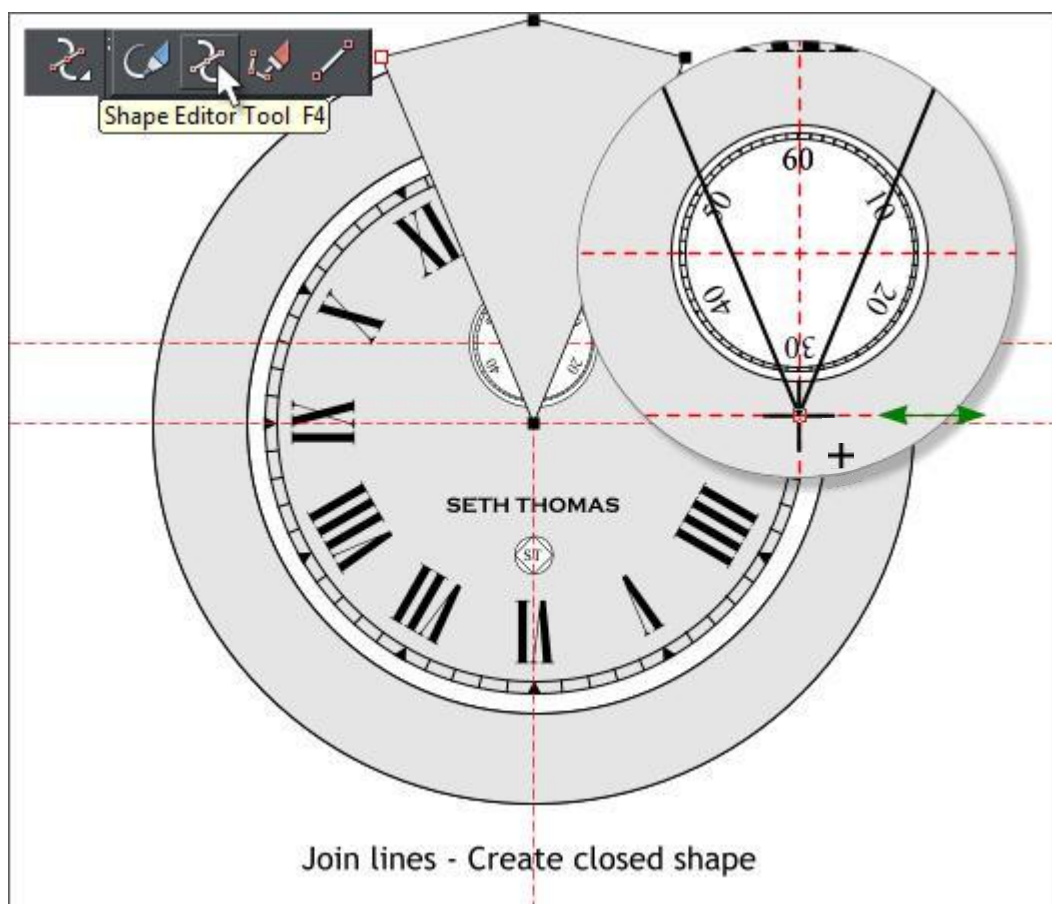
Select the two largest circles and press **Ctrl j** or **Arrange > Join Shapes** to create an O-shape. Clone the O-shape (**Ctrl k**).

Save your drawing and take a short break.



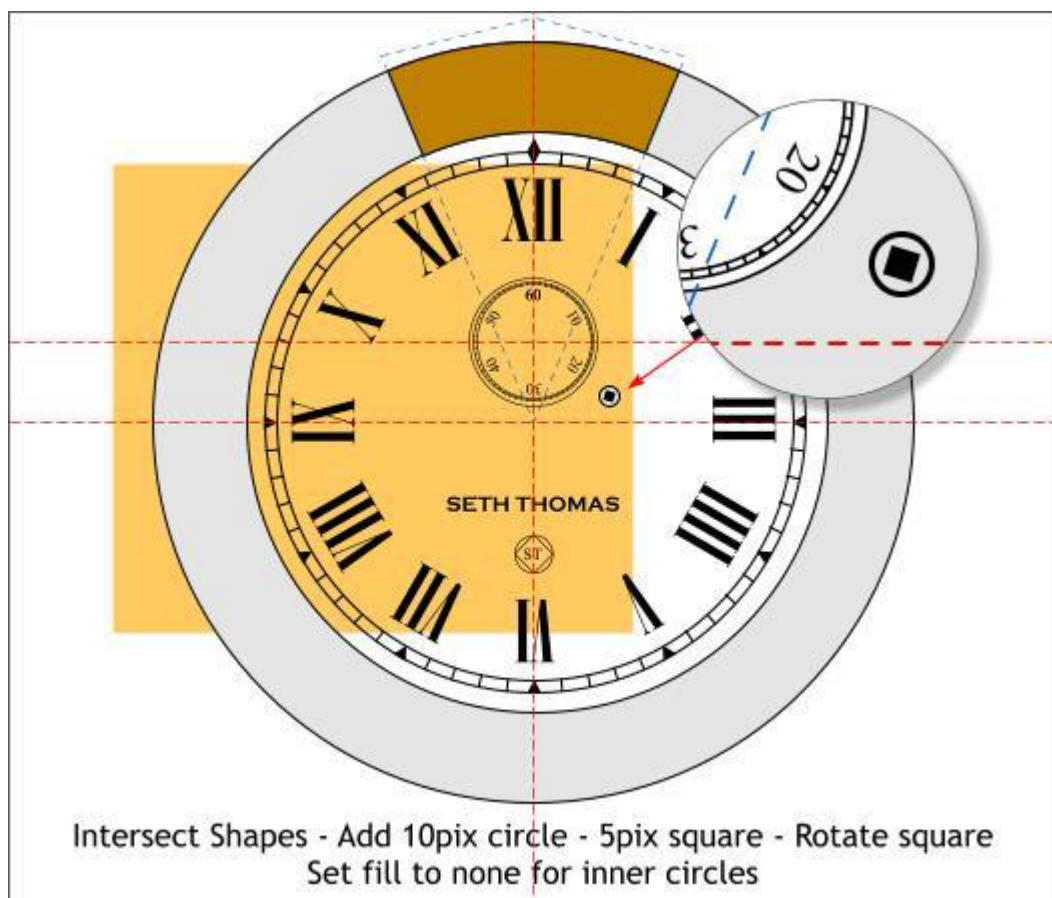
Use the **Shape Editor Tool** or the **Straight Line Tool** to draw a vertical line from the center of the two guidelines and extending above the O-shape. Click the bottom, center button on the *Set Origin Position* icon on the Infobar to set the angle of rotation to the bottom.

Key in **-22.5** (1/2 of 45 degrees) in the *Angle of Rotation* text entry box and press **Enter**. Clone the line and rotate the clone 45 degrees.



Select both lines. Switch to the **Shape Editor Tool** (F4). Select one of the bottom control points and drag the point away a very short distance then drag back (as shown above top right). The cursor will change to a + to indicate the two lines are about to be joined.

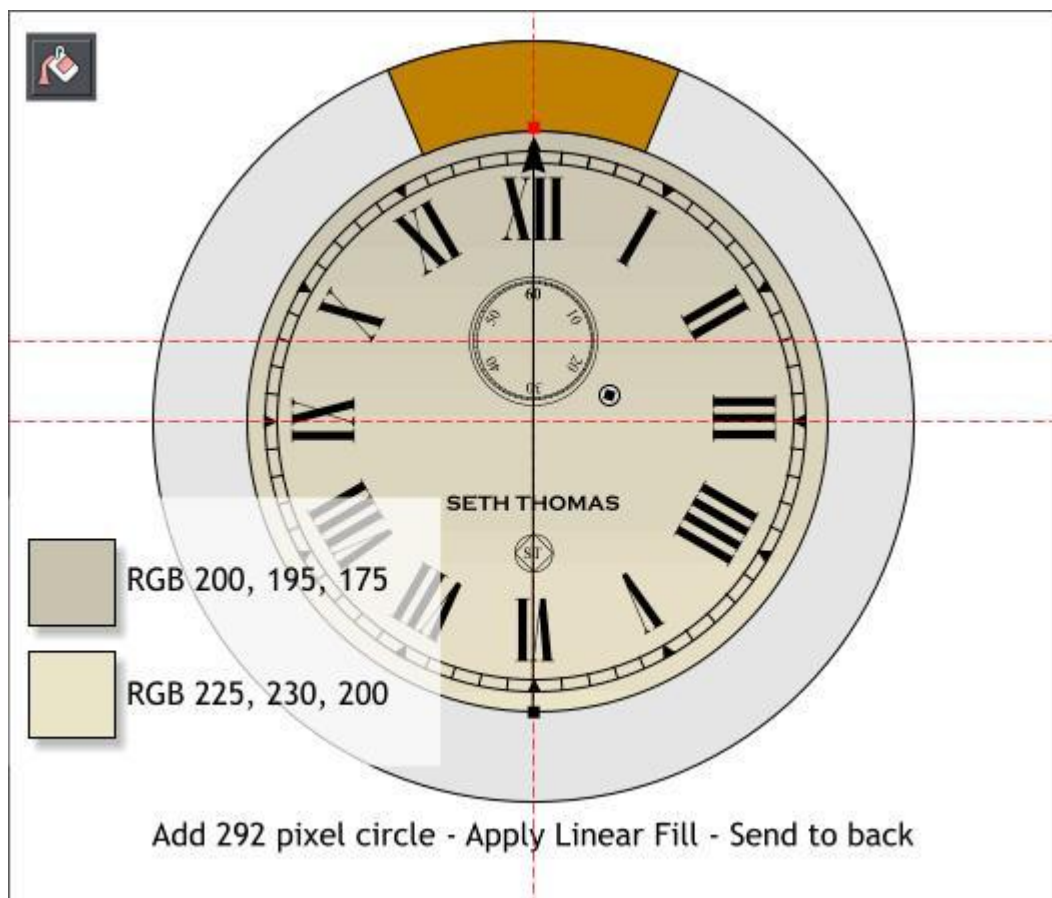
Click on either of the top control points, click a new point above the 12 o'clock position and then press **Enter** to close the shape.



Select the wedge shape you just created and the cloned ring shape. From the **Arrange** menu, select **Combine Shapes > Intersect Shapes** or press **Ctrl 3**. This removes all of the ring shape except a keystone shape shown above in dark yellow.

Hold down the **Ctrl** key and click on each of the inside dial circles and set the fill to none. I have placed a yellow rectangle in the back to show the results of setting the fill color to none.

Add a small circle and smaller rotated square as shown. This is the key hole for winding the clock. There is only one hole as this is not a chiming clock. Chiming clocks have two or three key holes.



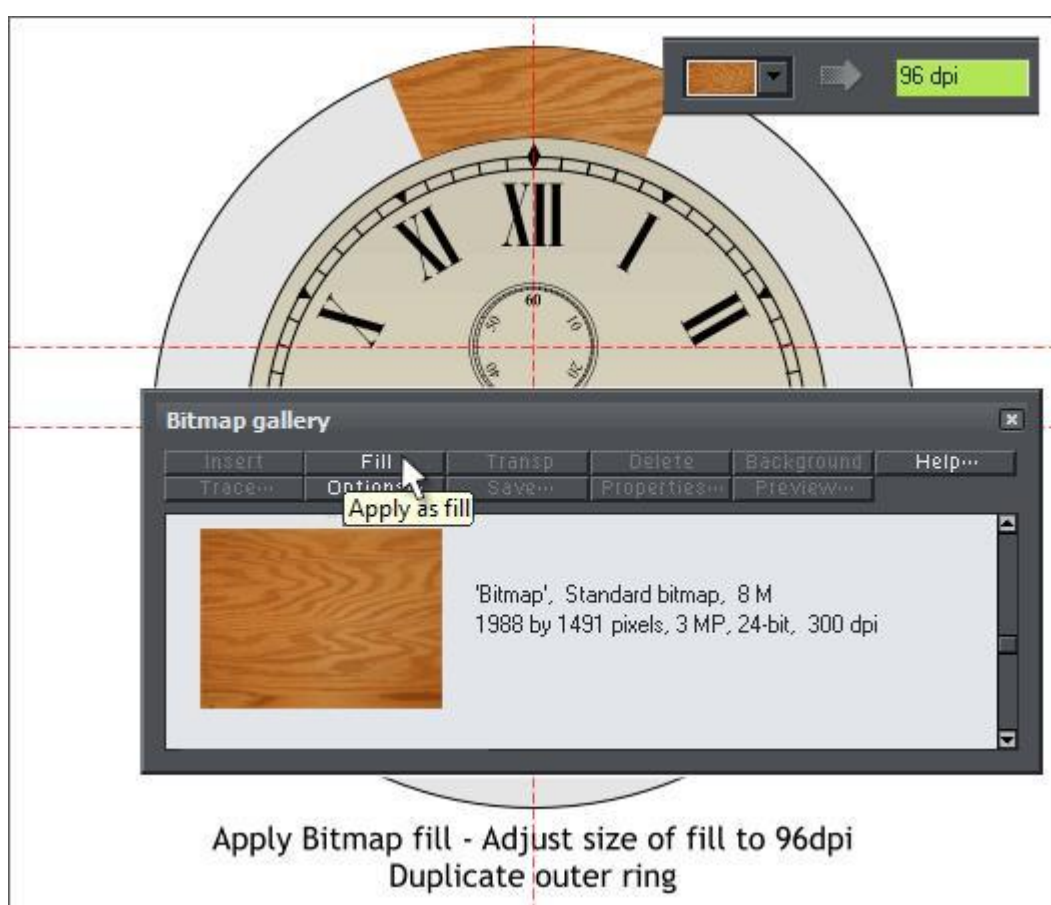
Draw a new 292 pixel circle centered on the two guidelines. Send the circle to the back (**Ctrl b** or **Arrange > Put to Back**).

With the new circle selected, select the **Fill Tool** (F5). From the *Fill Type* drop down list, select **Linear**. Drag the ends of the fill path arrows until the fill path arrow goes from 6 o'clock to 12 o'clock.

Open the **Color Editor** (**Ctrl e**) and edit the colors in the **RGB Color Model**. Click on the small square at either end of the fill path arrow to edit the color. The values are shown in this order, Red, Blue, Green.

NOTE: If your RGB colors are displayed in percent instead of 0-255, open the **Page Options** menu (right click on the page and select **Page Options > Units**). Change the **Color Units** to **0-255**. Click **Apply** then **OK** to close the dialog.

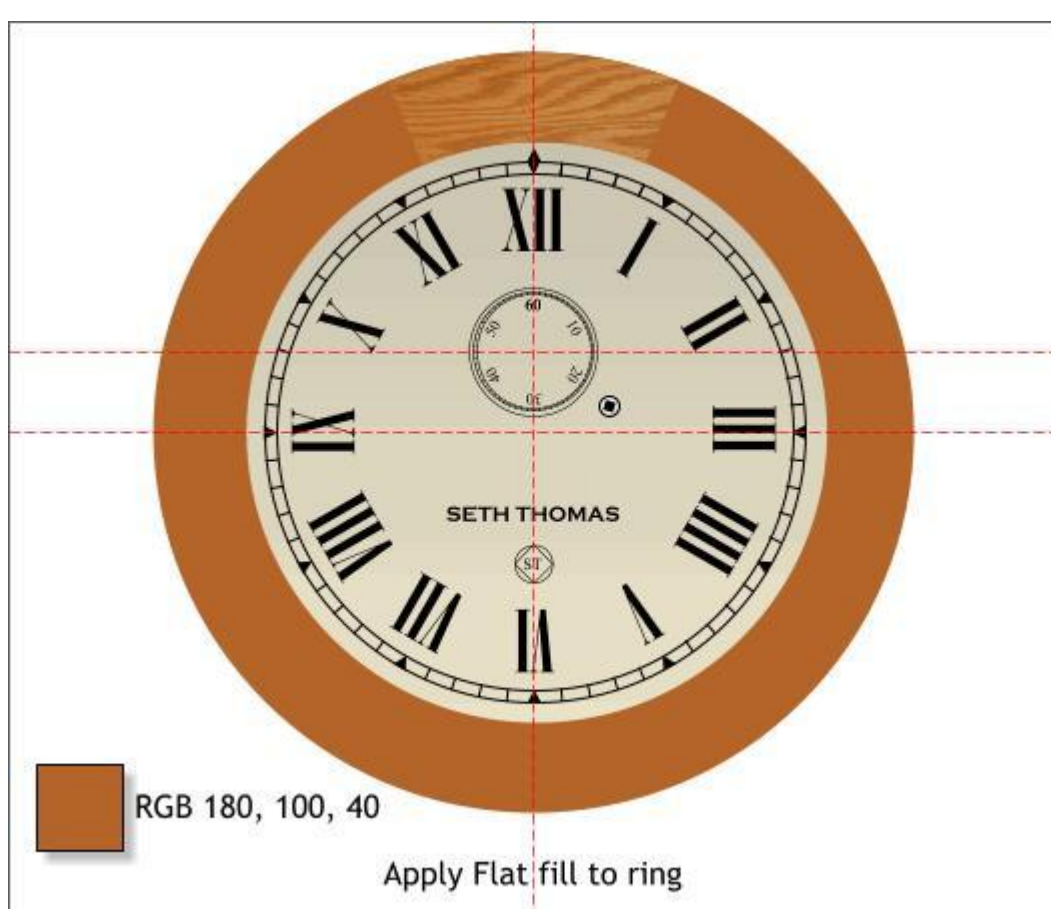
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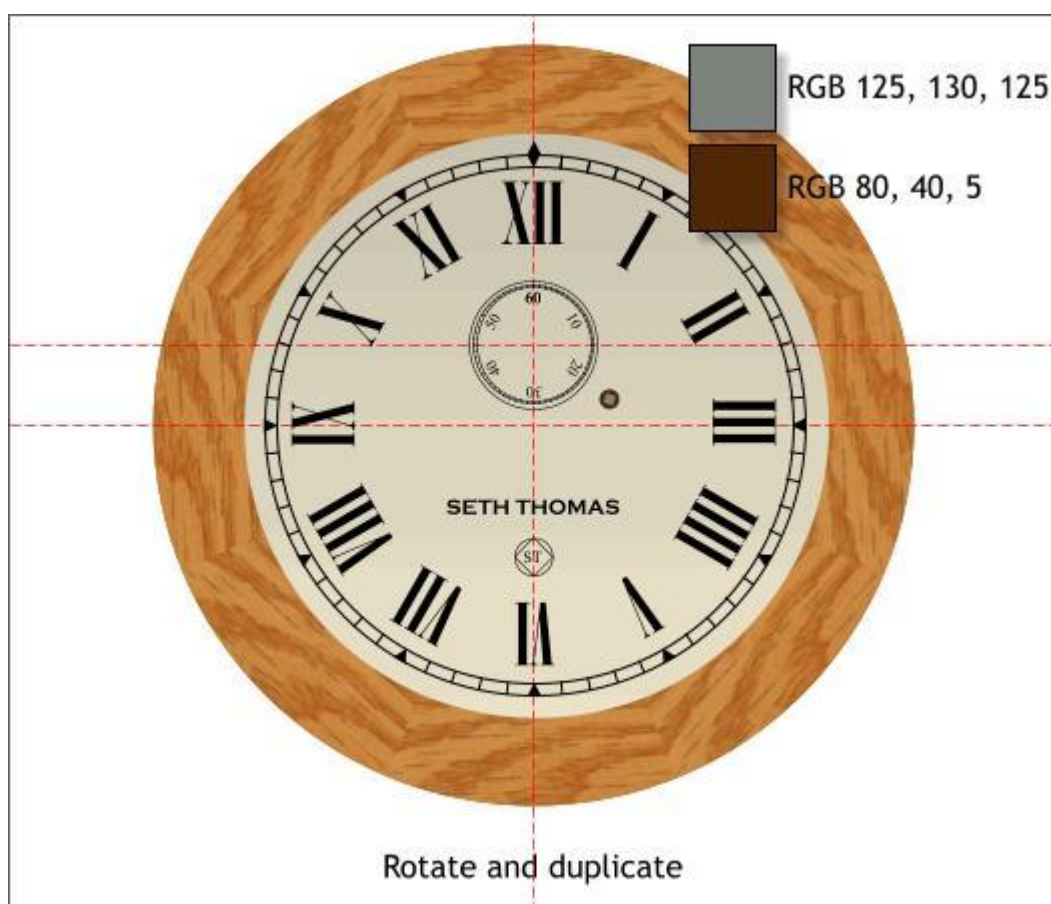
Find the image of the wood fill in the `index_html_files` folder in the zipped download and bring it onto the page.



Select the wedge shape above 12 o'clock. Open the **Bitmap Gallery (F11)**, select the wood bitmap and press **Fill**. Switch to the **Fill Tool (F5)**. Click twice on the wedge shape. On the Infobar change the **Bitmap Resolution** to **96 dpi**.



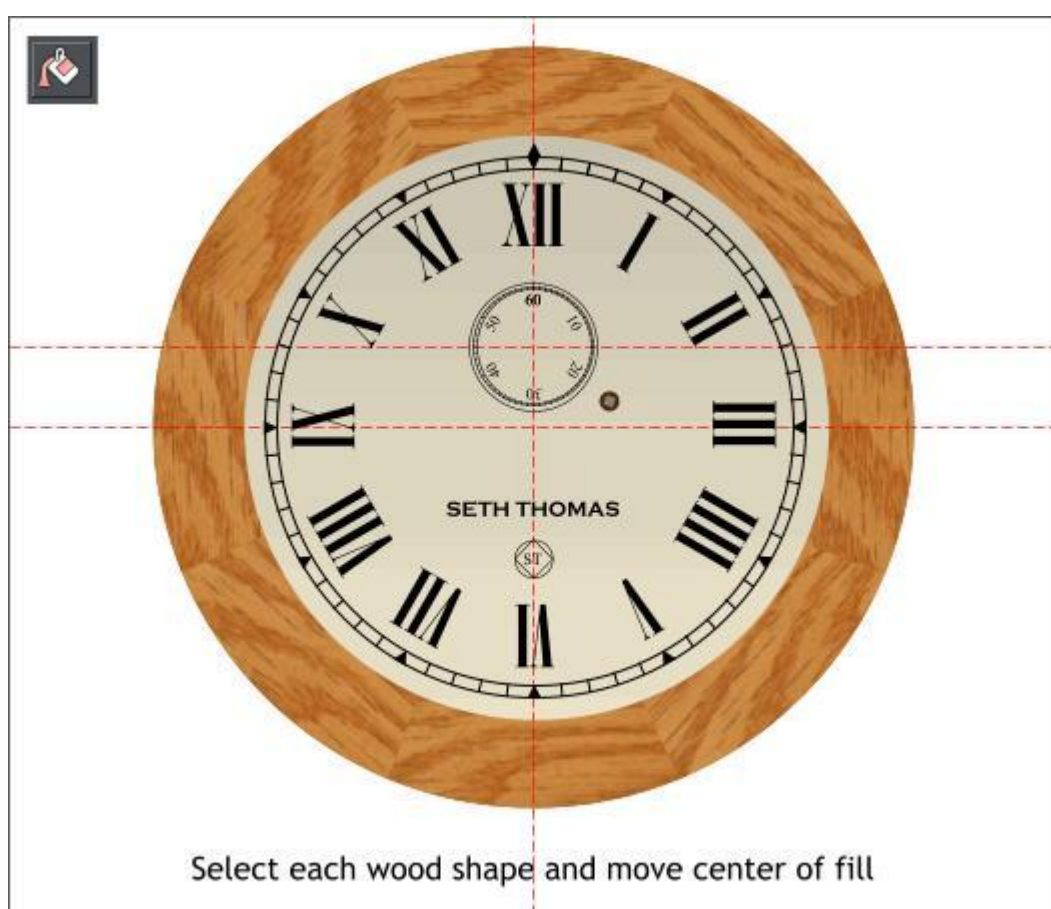
Apply a flat fill to the O-shape.



Apply the two flat colors shown to the key hole and metal thing. (If you know the name of the protrusion the key fits over, let me know).

Duplicate the wedge shape and rotate -45 degrees. Repeat until all 8 sections are in place. Rotate around the intersected guidelines.

TIP: Click twice on the wedge shape to enable rotate/skew mode. Drag the center of rotation to the cross section of the two guidelines. Hold down the **Ctrl** key and drag any of the corner arrow rotation handles with the **RIGHT** mouse key. When you release the mouse key a duplicate shape will be dropped. Repeat.



Select the **Fill Tool (F5)**. Click on each wood shape, then click the center of the fill (where the two fill path arrows meet) and drag the fill to create a different fills. Repeat this for the other shapes. This makes the round face appear to be made up of several different pieces of wood and not just the same piece each time.

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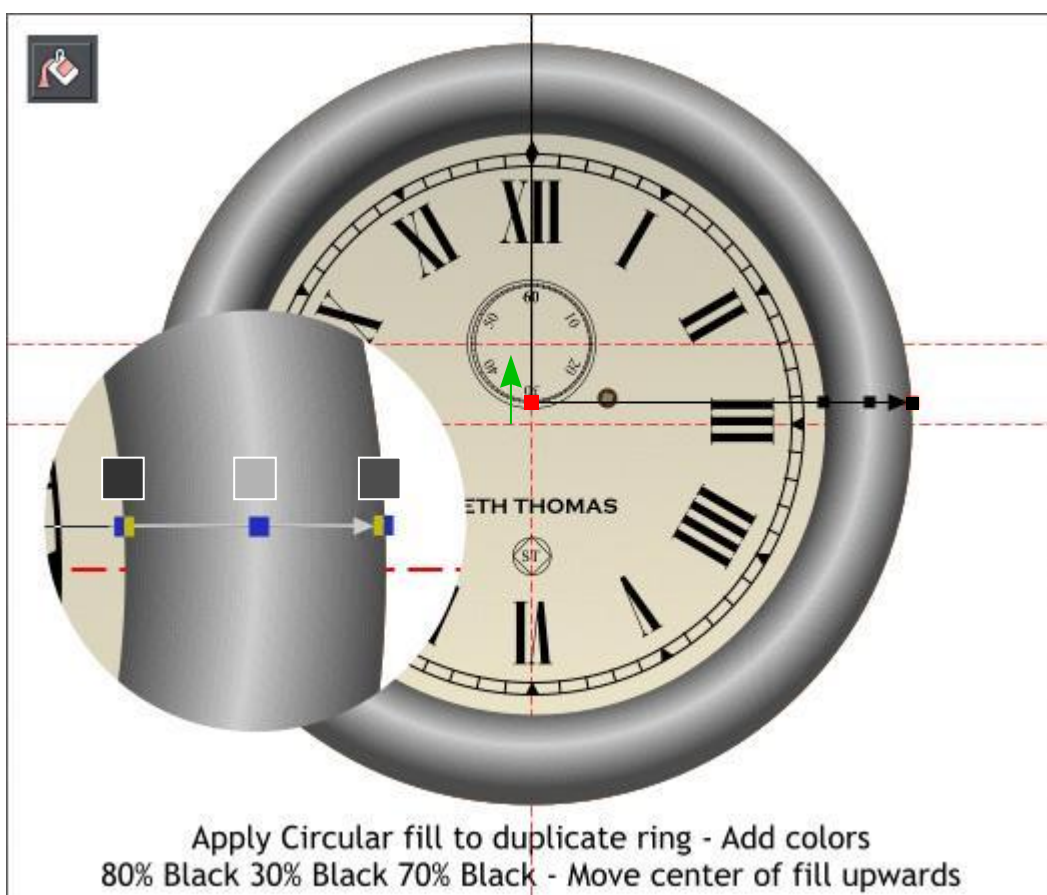
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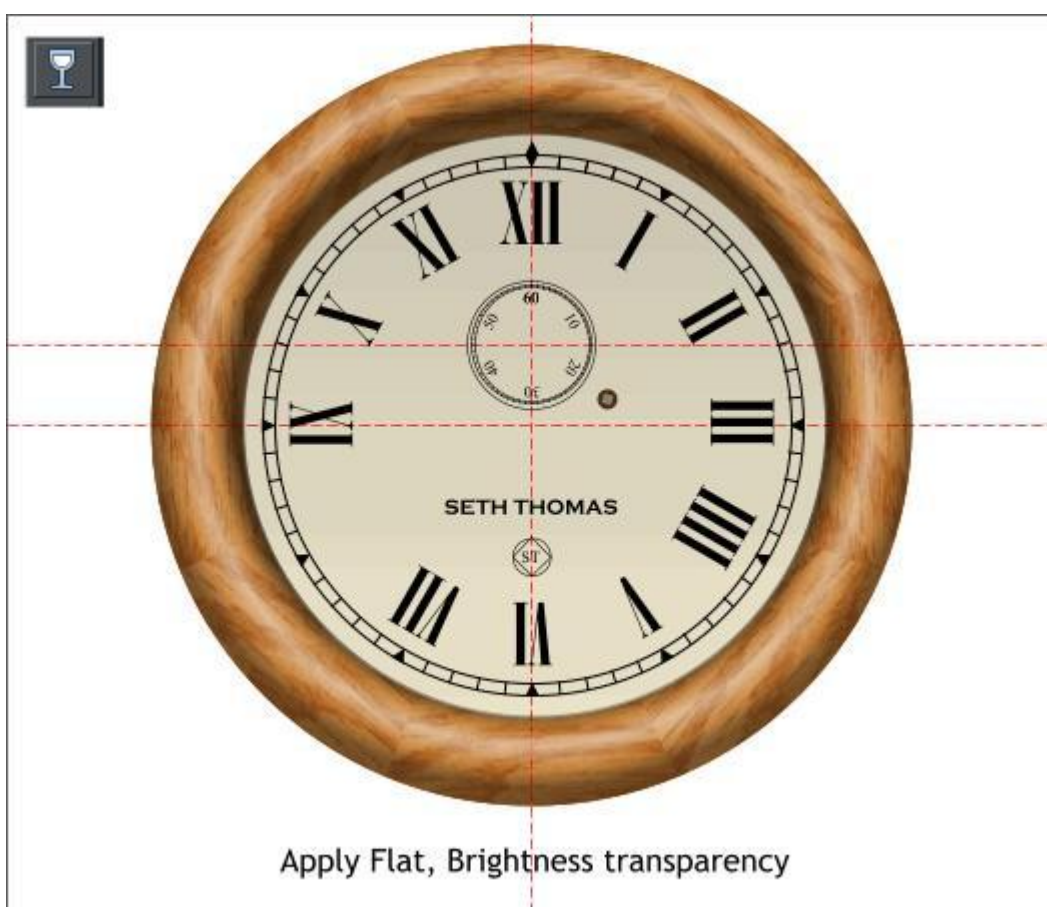
Hold down the Alt key and click twice on one of the wood filled sections to “drill down” to the O-shape below. Press Ctrl k (Clone).

Select the cloned O-shape with the Fill Tool. From the Fill Type drop down menu, select Circular.

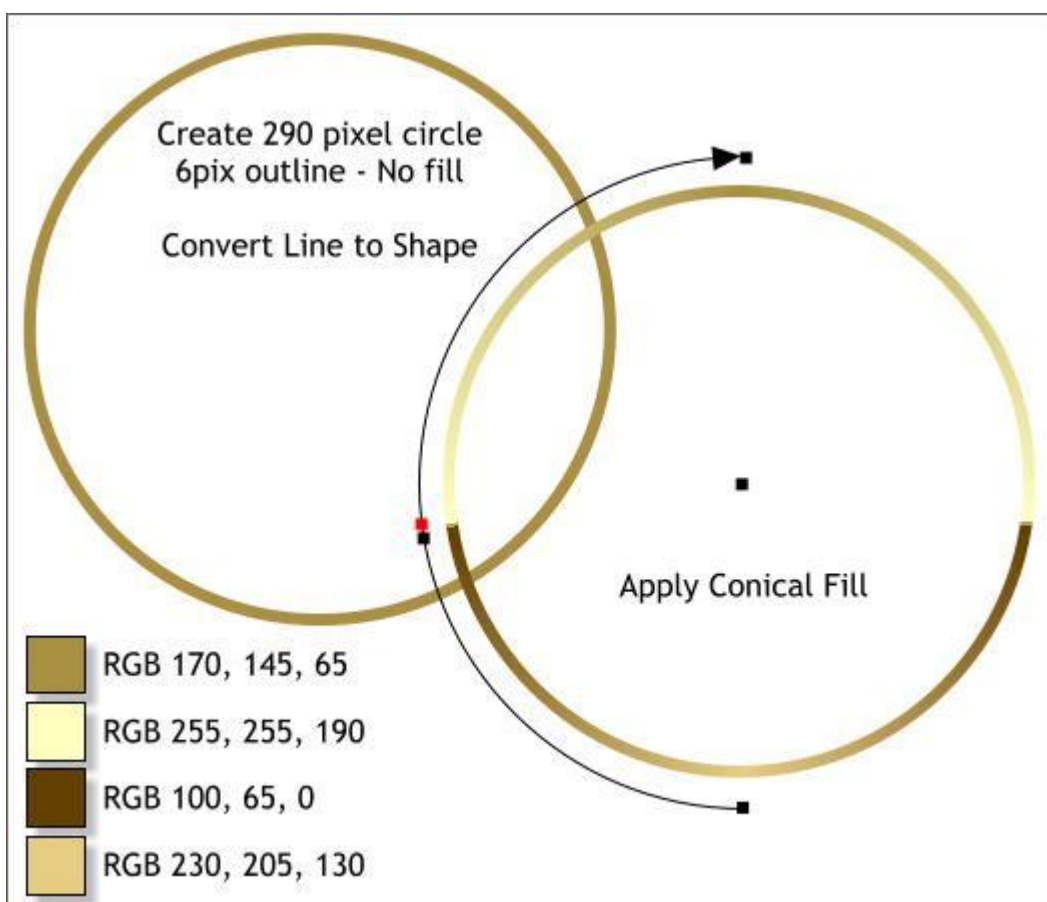
Zoom to 300%. Double click on the right fill path arrow at the inside edge of the O-shape to add a new color. Double click in the center of the shape to add a second color. Click the inside new color and change the color to 80% Black. Change the fill for the new center color to 30% Black. Make the outside color 70% Black. Click the center of the fill where the fill path arrows come together. Use the up arrow key on your keyboard to move the center of the fill upwards about 12 pixels.

TIP: You can press 1, 2, 3, or 4 on the keyboard (above the alphabetical keys) to zoom to 100%, 200%, 300% and 400%. Press 5 to zoom to 50%. I like to zoom in and out for close work.

TIP II: You can also create a New View (Window > New View). Zoom in tight in the new view. Then press Ctrl Tab to toggle back and forth between views. You can create many views.



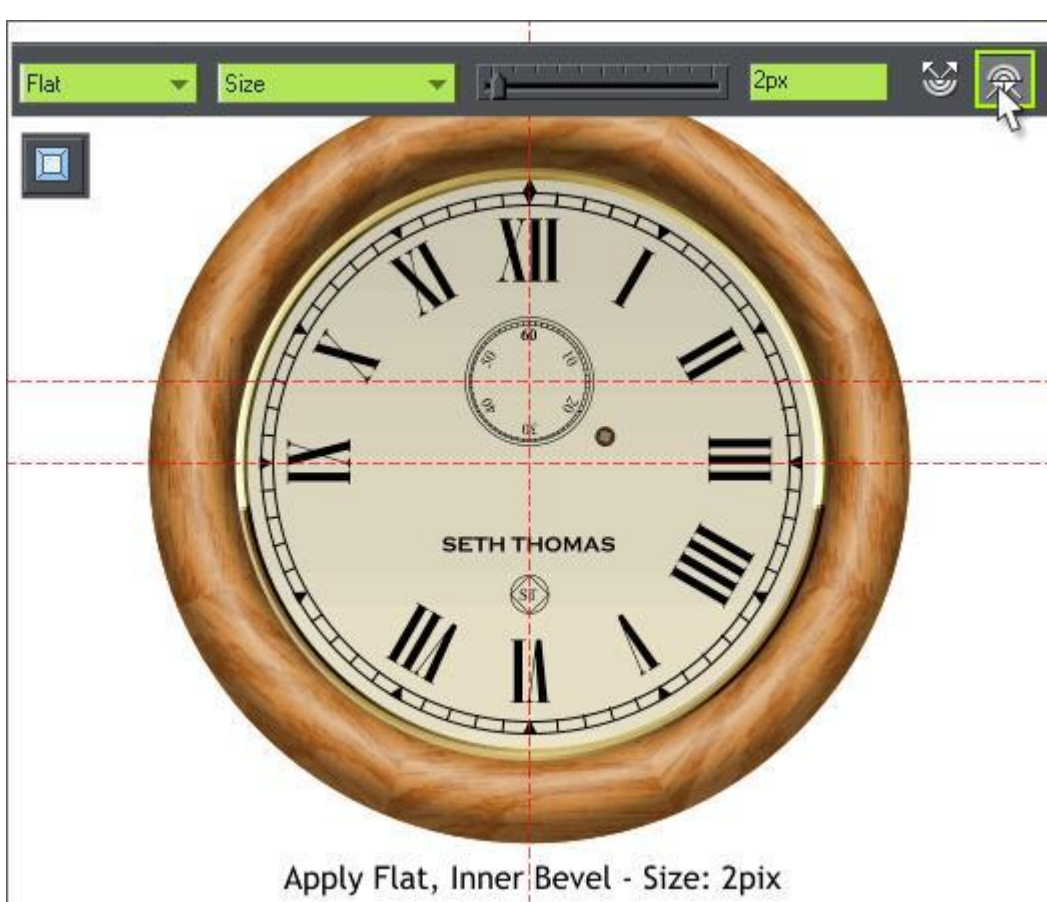
Select the Transparency Tool (F6). Click on the O-shape. Select Brightness from the Transparency Type drop down list.



Create a new 290 pixel circle. Change the outline to 6px and the fill to none. From the Arrange menu, select Convert Line to Shapes.

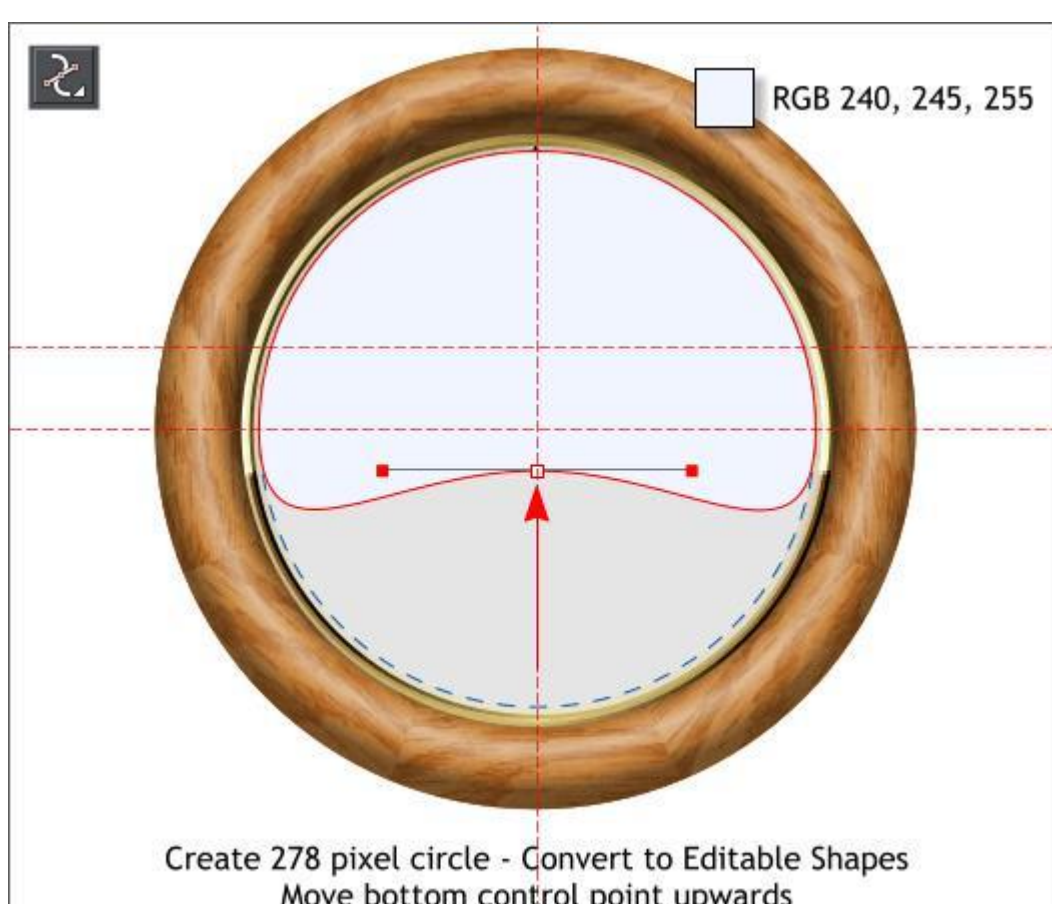
NOTE: The designation for pixels used to be pix, as in 12pix. In Designer 6 Pro this has been changed to px to be consistent with the rest of the industry. You can use either px or pix in Designer.

Select the Fill Tool (F5). From the Fill Type drop down list, select Conical. Drag the end of the fill path arrow so that the arrow is centered over the top of the ring. Double click on the fill path arrow to add two new colors a little below halfway down. Apply the colors shown. The two middle color control points should be very close to create a sharp edge.



Select the new ring shape with the Bevel Tool (Ctrl F3). Select Flat from the Bevel Type drop down list. Select Size from the Slider Types drop down list and change the Size to 2px. Press Enter to apply the change. Press the Inner Bevel icon to move the bevel inwards.

Save your drawing and take a short break.



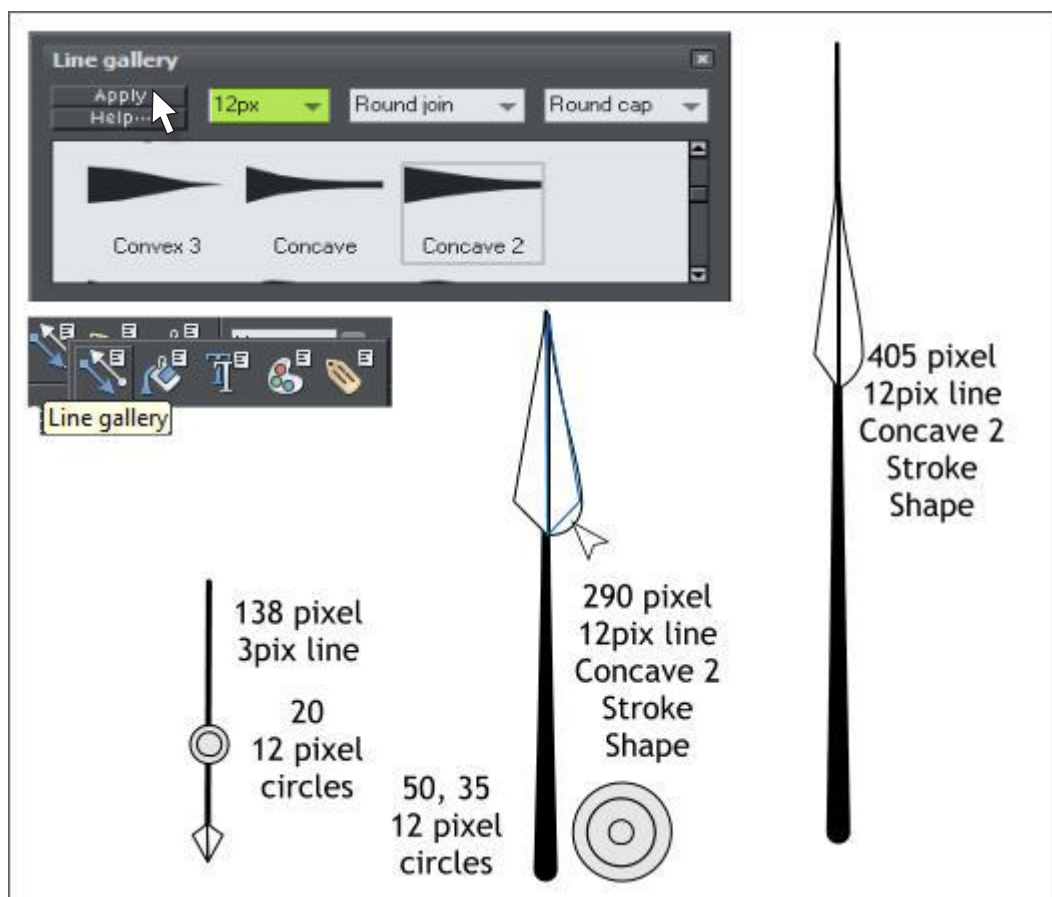
Create a new 278 pixel circle. With the circle selected, select **Convert to Editable Shapes** (or press **Shift Ctrl s**).

Switch to the **Shape Editor Tool (F4)**. Select the bottom center control point and move the point upwards to about 20 pixels below the center of the circle. Change the fill to the color shown. (No outline).



Select the **Transparency Tool (F6)**. Click on the shape to select it, then click slightly above the shape, hold down the **Ctrl** key to constrain the angle and drag straight down to just above the **ST** logo. Click on the top control point then change the *Transparency* slider setting to 20%. Click on the bottom control point and change the slider setting to 80%

On the top, right side of the Infobar, move the *Feathering* slider to 3px.



We will create the hands larger to make the job easier. We will reduce them to the proper size later.

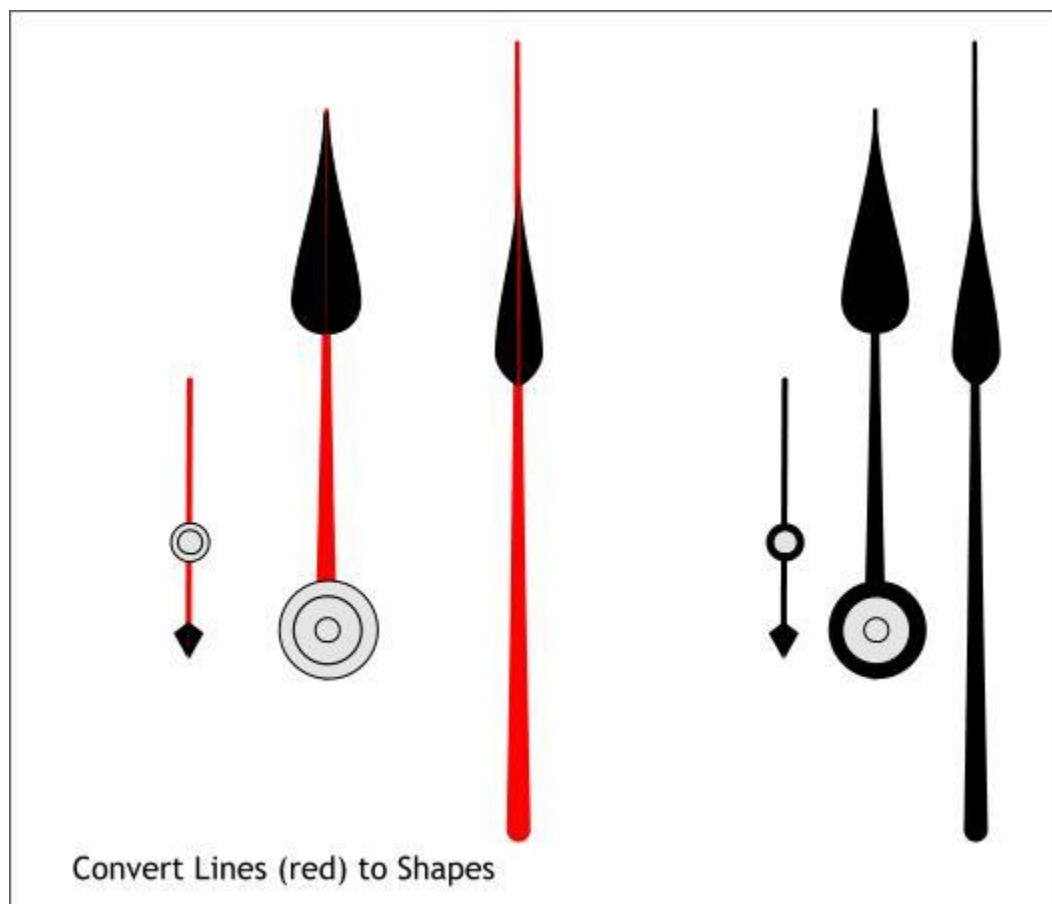
Create three vertical lines to the heights and line widths shown.

Open the **Line Gallery** (no more shortcut!) In the **Stroke Shapes** folder, select **Concave 2**. Apply this stroke shape to the two large hands.

Create the two sets of centered circles shown.

Select the **Shape Editor Tool (F4)**. Select *Make Line* mode on the Infobar. Draw the triangle shapes shown on the left of each hand. Pull on the edges with the **Shape Editor Tool** to gently curve the shape. Clone the shape and flip horizontally.

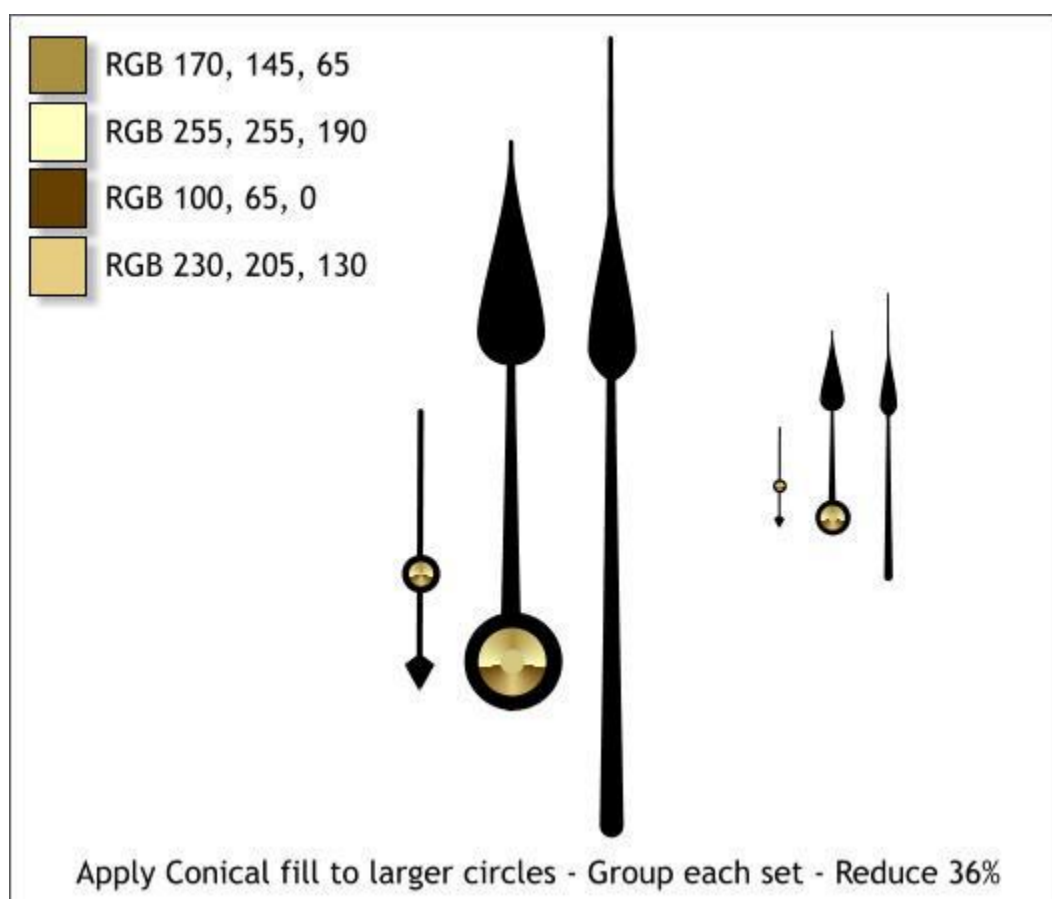
[Click here for a video on creating the top of the hands.](#)



Select the three vertical lines (shown in red) and **Arrange > Convert Line to Shape**.

Arrange the converted lines and circles as shown.

For each hand do the following: Select the objects shown in the right in black, (do not select the circles shown in gray). From the **Arrange** menu select **Combine Shapes > Add Shapes** or press **Ctrl 1**.



Apply a Conical Fill to the larger circles. Apply a Flat fill to the inside circle on the large hand. You can pick the color.

Group the objects for the large hand and group the two objects for the seconds hand. Reduce the three hands to 36%.

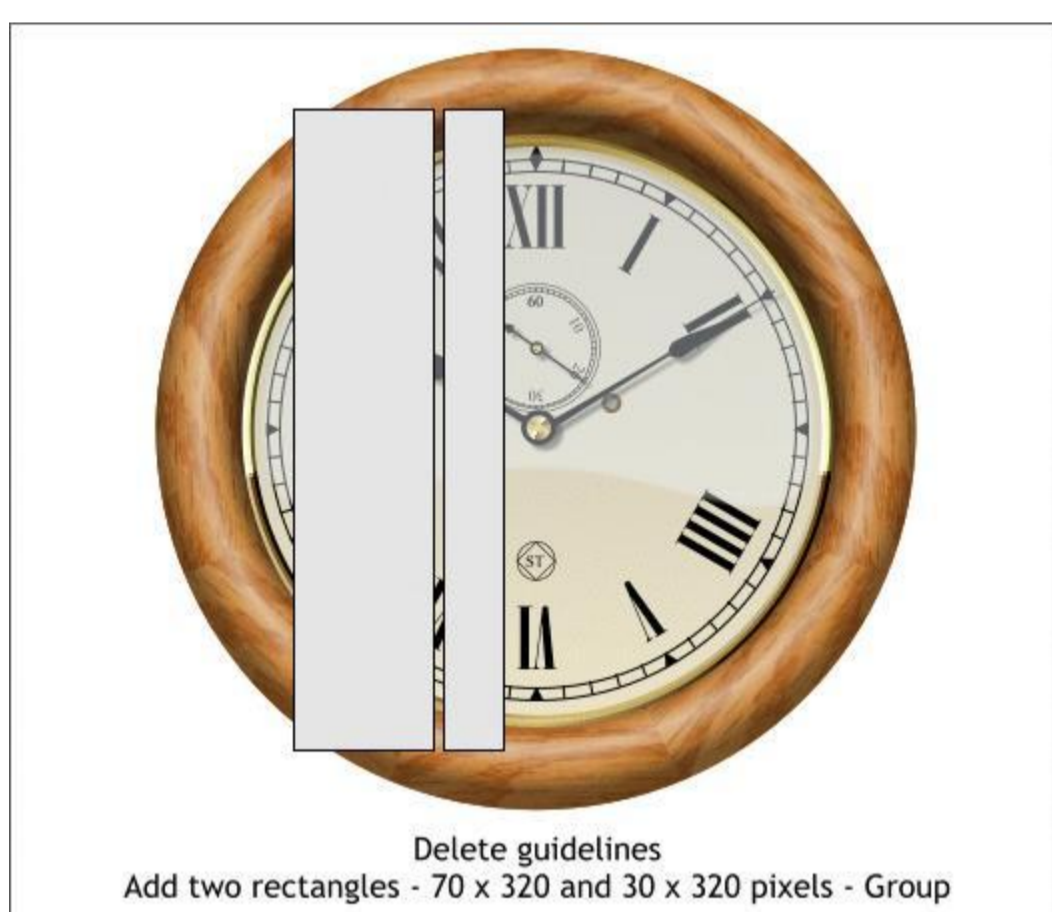


Add the hands to the clock and rotate them as shown.

Select the three hands then switch to the Shadow Tool (Ctrl F2). Apply a *Wall Shadow* and change the settings on the InfoBar as shown above.

Select the highlight shape and bring it to the front (Ctrl f).

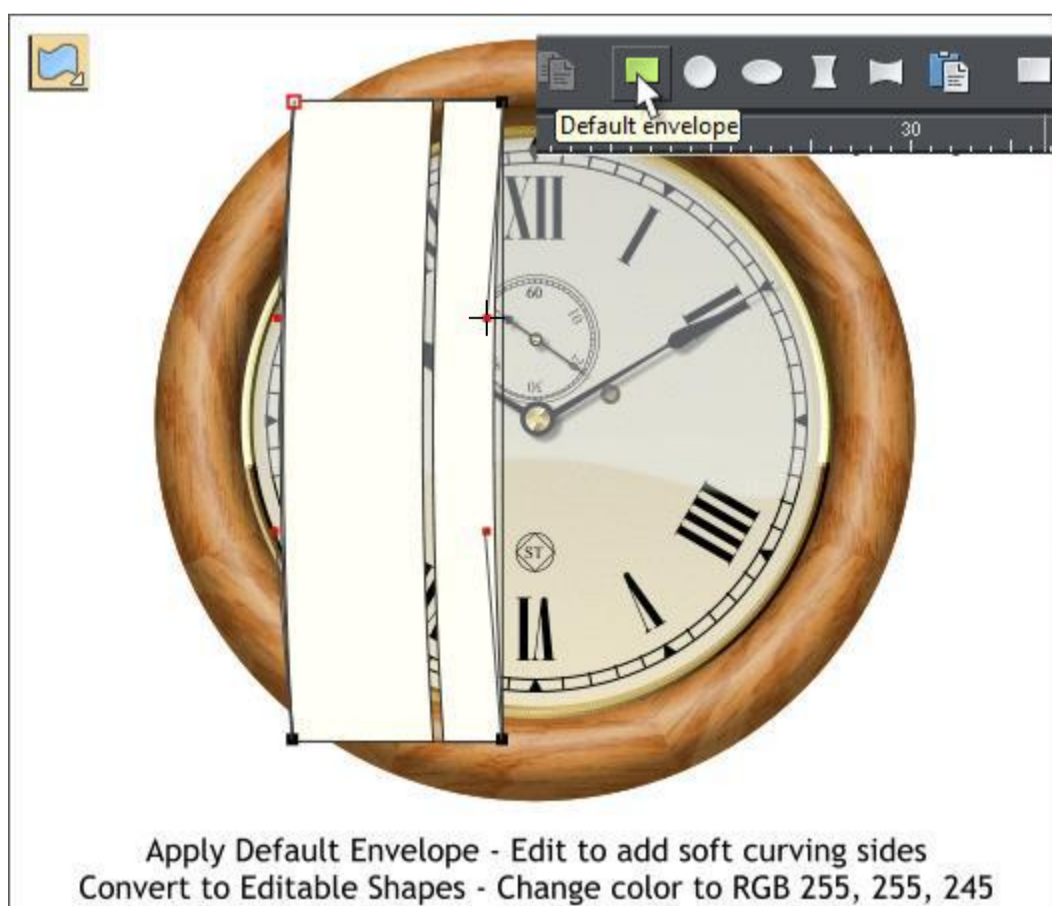
Select the highlight shape with the Transparency Tool (F6). Change the *Transparency Type* to Flat and the *Transparency* slider setting to 60%.



Delete the Guidelines.

TIP: Right click on the screen ruler and select **Delete All Guidelines** to remove all the guidelines with one click.

Create two rectangles to the sizes and position shown and Group them.

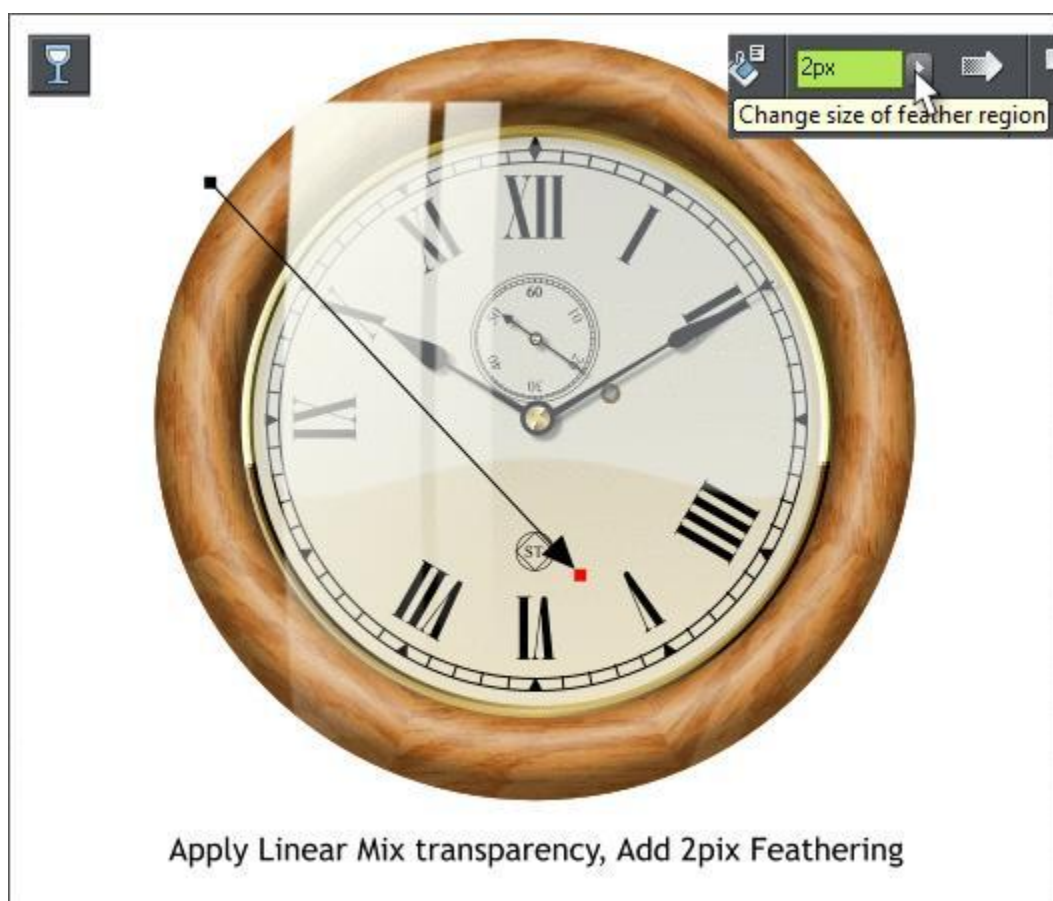


With the grouped rectangles selected, select the Mould Tool (Shift F6). Click the *Default Envelope* rectangle icon on the InfoBar (the first rectangle icon).

Click the top left corner to enable the Bezier control handles and drag the small red squares to edit the envelope to create a very subtle curve. Click the other corners as needed to reveal the control handles.

Arrange > Convert to Editable Shapes.

Change the Fill color to the color shown above.

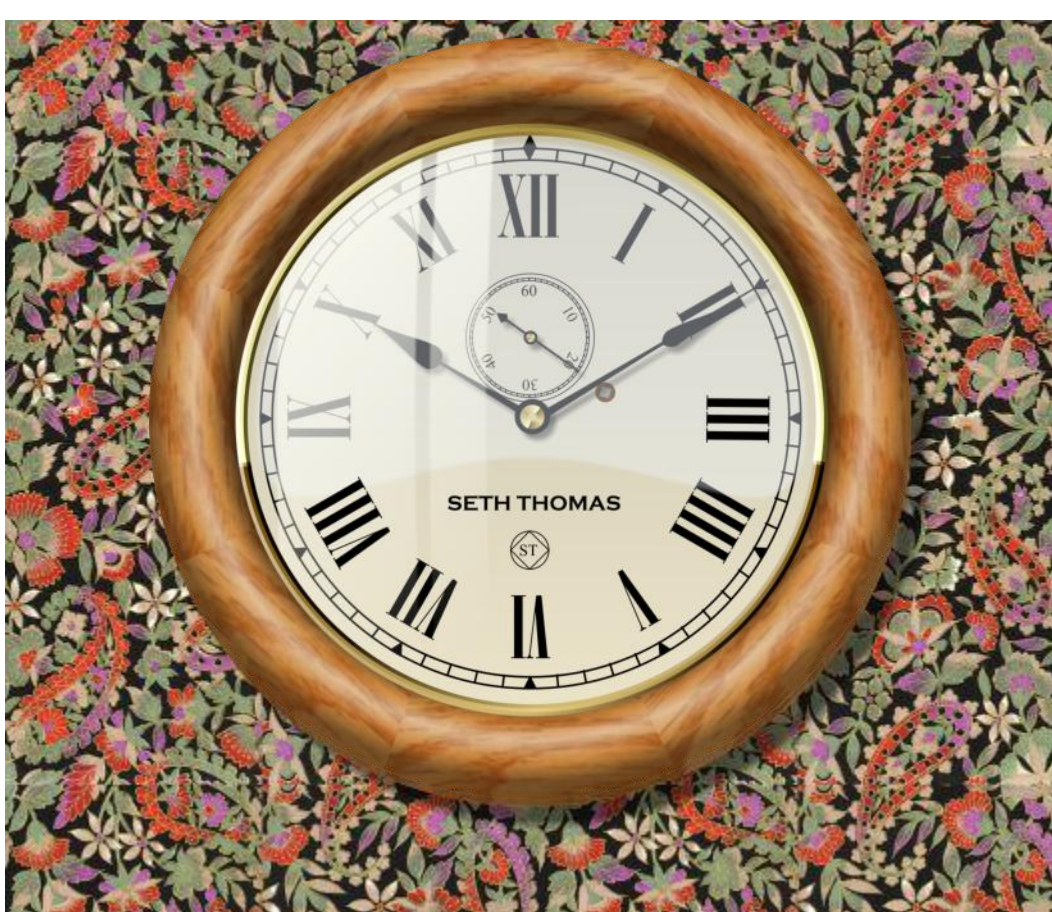


Apply a Linear Mix transparency. Apply 2px of *Feathering*.



Select the clock face and clone it (Ctrl k).

Select the face and the two enveloped rectangles and **Arrange > Combine Shapes > Intersect Shapes** or press Ctrl 3. Select the brass bezel and bring it to the front (Ctrl f or **Arrange > Bring to Front**).



And that completes the first half of the clock tutorial. You sharp eyed persons may notice that the SETH THOMAS text reappeared just in time. It was hidden behind the clock face. I switched to Outline View and discovered it trying to be part of the wallpaper! I am hopeful you have been less careless than I have been! But wait, it gets worse. The III and VIII went missing as well. I am happy to say they were hiding out with the Seth Thomas text. Those naughty, naughty objects!!!

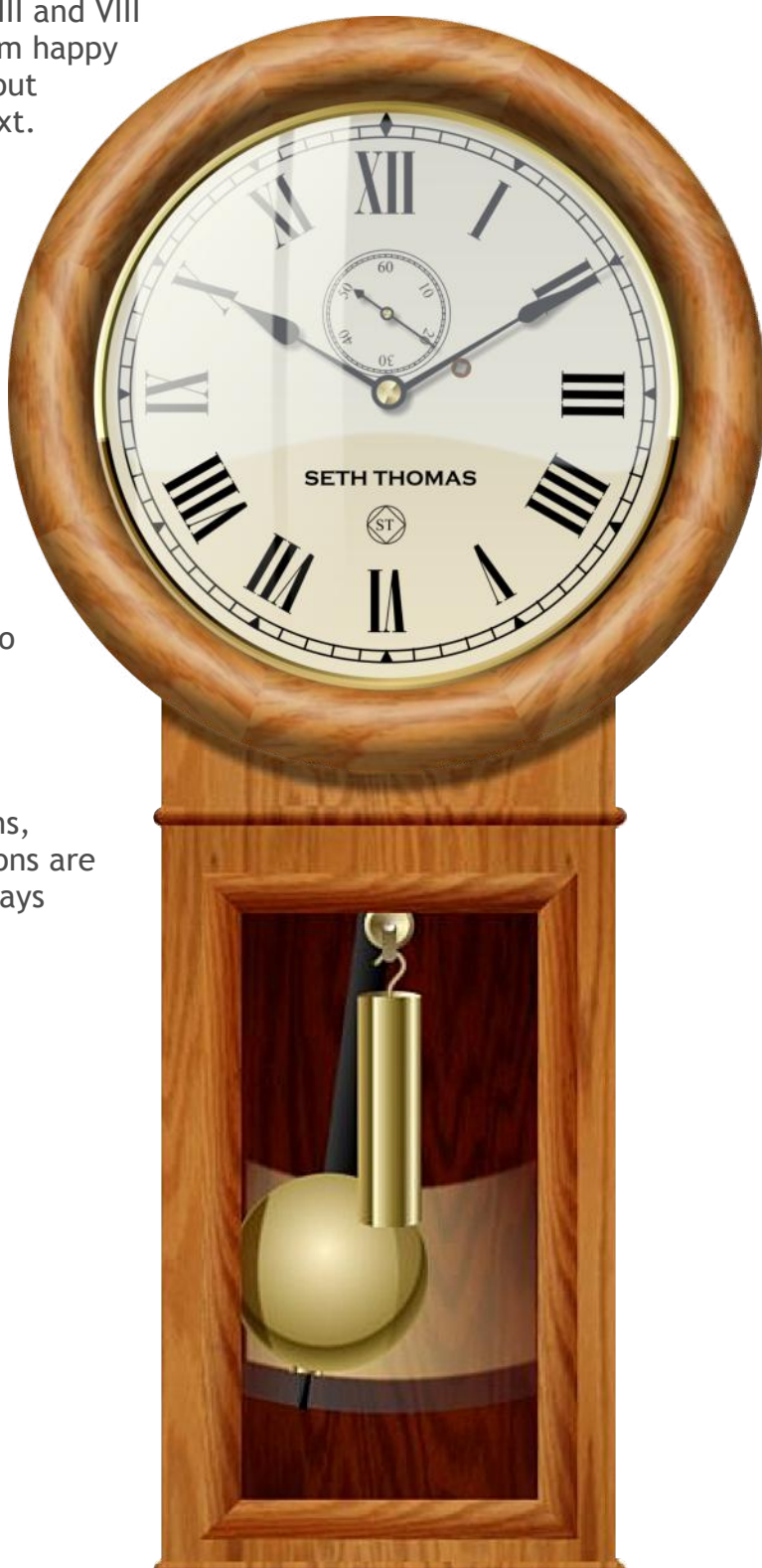
On August 15 we will complete the bottom half of the clock. It will look more or less like this, though I retain the right to make changes as I see fit. Also there are a few more shapes that appear at the bottom of the case that will need to be added.

So, how did you do?

Your comments, questions, corrections and suggestions are always welcome and always responded to in a timely manner. Honest!

Gary W. Priester
Host

[Send e-mail](#)



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