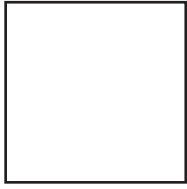


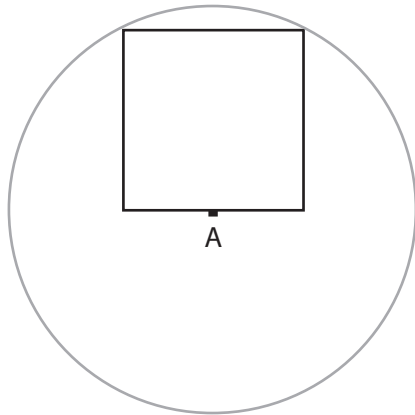
# CGRA1000 - How to draw the golden section rectangle in Illustrator



1. draw a perfect square - **hold down shift** while you drag with the sq. tool. Make sure the fill color is transparent!

Tip: It helps after drawing your square to open the transform palette (Window>Transform) and check the size of the square, to make sure it's a round number. Plotting the midpoint will then be easier.

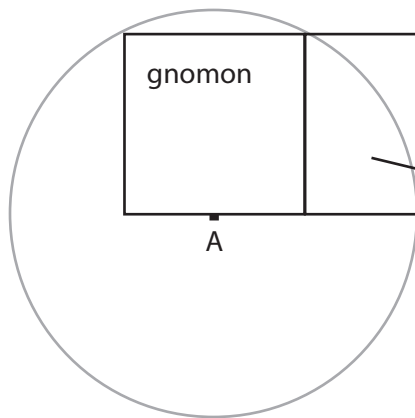
2. Switch to the circle tool (behind the square)



Hold down the **alt (Windows) or option (mac) key** with your mouse at the **center\*** of the square to set the midpoint location of the circle you're about to draw, then **hold down shift AS WELL**, while drawing the circle. Stretch it until the top meets the top of the square.

Note: the circle should touch the tops of the square on both sides. If it doesn't, try using the arrow keys on the keyboard to nudge it in place.

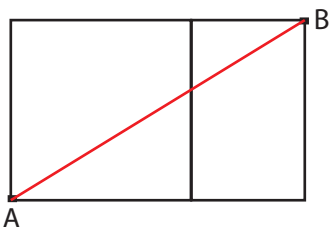
*\*You can find the exact center of the square with the Transform palette. Click the bottom center square in the transform palette's picture and note the x and y values. Draw a small marker dot with the same x and y values (click back to the center square in the trans. palette) and use that to position your mouse when drawing the circle.*



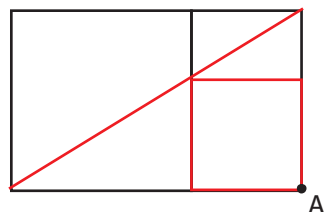
3. Drag with the rectangle tool to make a rectangle as tall as the square, and whose width hits the right of the circle. (I am now going to delete the circle because I don't need it anymore.)

reciprocal rectangle

Tip: Use the Transform palette to make sure your rectangle is the exact same height (H:) as your square, and has the same Y: value, so it's aligned properly.

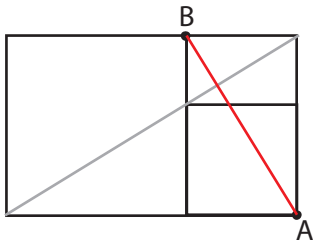


4. Draw a diagonal line from point A to point B. This will help you tell where to position your subdivisions.

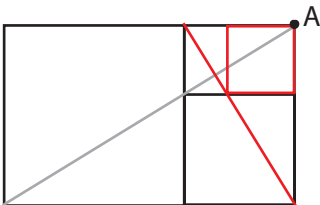


5. Hold down shift and drag with the square tool from point A to where the square meets the diagonal line across the rectangle and hits the dividing line. (If it doesn't fit without you letting go of shift you know your rectangle isn't the correct size).

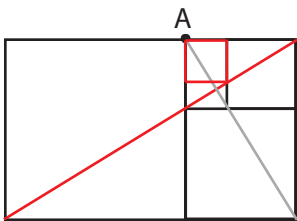
CGRA1000 - How to draw the golden section rectangle in Illustrator



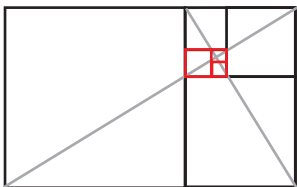
6. Drag another bisecting diagonal line across the small golden section rectangle that was created.



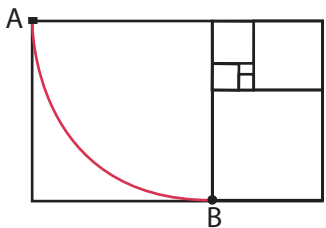
7. Hold down the shift key and drag from point A down to where the square meets the top of the one below and touches the second diagonal line (the red one.)



8. Drag a perfect square with the shift key down to where the original diagonal (red) intersects with the last square.

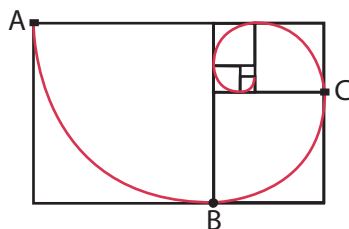


9. Continuing subdividing, if you're enjoying yourself.



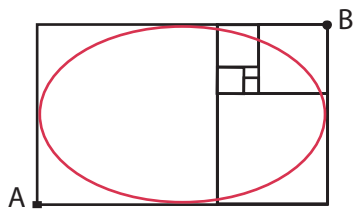
10. Now you can draw the **golden section spiral!**

While there is a spiral tool (behind the line), I find it easier to use the pen tool (click on point A, move your mouse to point B, and drag horizontally

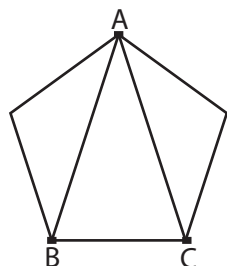


11. I find clicking the last point on each curve to convert it to a corner point useful.

Alternate which direction you drag the pen tool in each time, from horiz. to vertical.



12. You can also draw the **golden section ellipse!** Drag from point A up towards point B with the circle tool.



13. Finally, let's try the **golden section, or "sublime" triangle**, an isosceles triangle with angles of  $72^\circ$  and  $36^\circ$

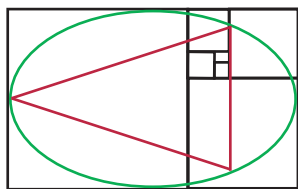
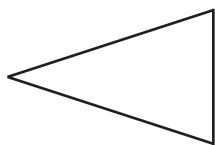
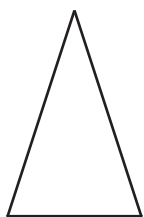
a) With the pentagon tool, click on the background of the page. Enter in 5 for the number of sides. Don't worry about the size; you'll have to resize it anyway. Now draw two lines coming down from A to points B and C.

b) Delete the pentagon and add a connecting line at the bottom. Shift-click to select all of the lines and Object>Group them.

c) Now, with the triangle still selected, double-click the rotate tool and enter in  $90^\circ$

d) Position the golden section triangle within the ellipse and resize as needed, holding down the shift key while you do so as not to lose the angles.

(Note- you can also make one line of  $162^\circ$  ( $72^\circ$  rotated  $90^\circ$ ) and the other of  $198^\circ$  ( $108^\circ$  rotated  $90^\circ$ ) and join them with a vertical line to get the triangle. Then proceed from the latter half of step b)



14. And now look what you can do- make a golden section spiral out of the golden triangles (see pg. 31 for details)

