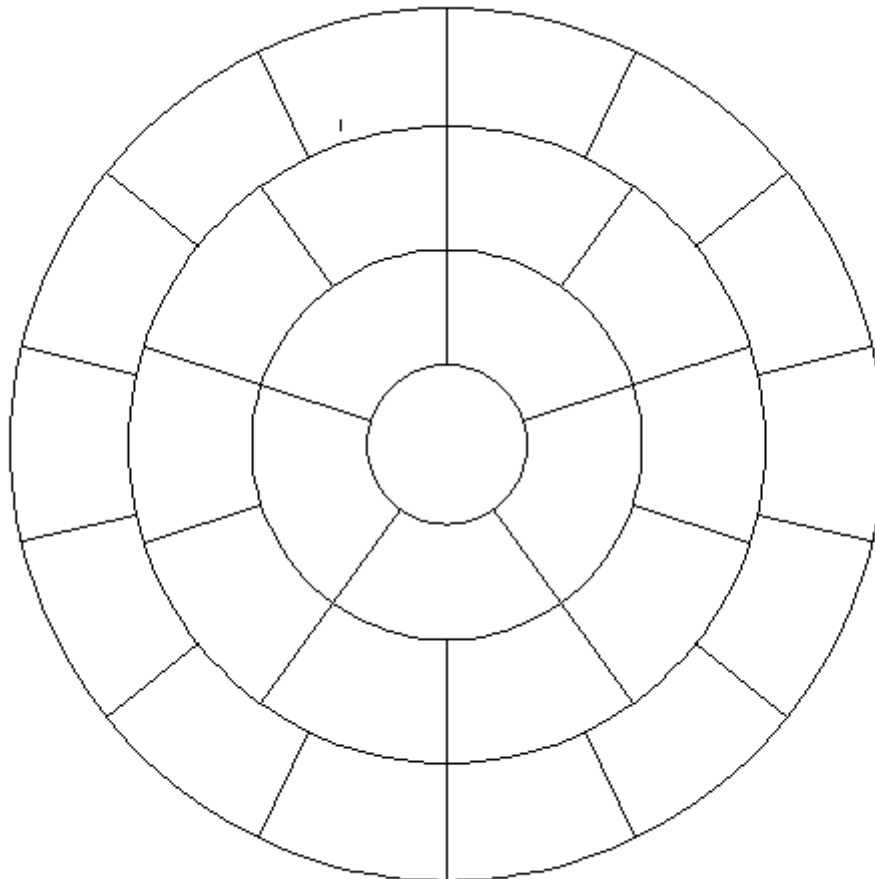# Answer on Question #57594 – Math – Geometry

BACKSTORY: I need to collect 500 plant samples for strontium analysis. The samples are randomly distributed across a circular area with a radius of 300 kilometers. I have to do this in 30 days, so I want to be methodical.

REQUEST: Divide the circle into 30 regions of equal area using lines and/or arcs, NONE OF WHICH pass through the center of the circle. One wrinkle: I'd like each of the regions to have the highest compactness possible. That is, I'd like the average ratio of the area of the regions to the area of a circle having the same perimeter to be as close to 1:1 as possible.

DESIRED RESULT: An explanation of how to do this myself is good; a pdf of the solution is better!

## Solution

The four circles have radii of $\frac{300}{\sqrt{30}}, \frac{300}{\sqrt{5}}, \frac{\sqrt{8}*300}{\sqrt{15}}$ and 300km. The first annulus is divided into 5 regions, the second one into 10 regions and the third one into 14. All regions have the same area $\frac{\pi 300^2}{30}$.