Quivering Polygons

The image to the right is an example of a quivering square. The image is close to, but not quite, a square. Images such as this are easy to create and fun to watch being drawn.

Let ***d*** be the desired number of sides in the quivering polygon.

For example, if you want a quivering square, then set ***d*** = 4.

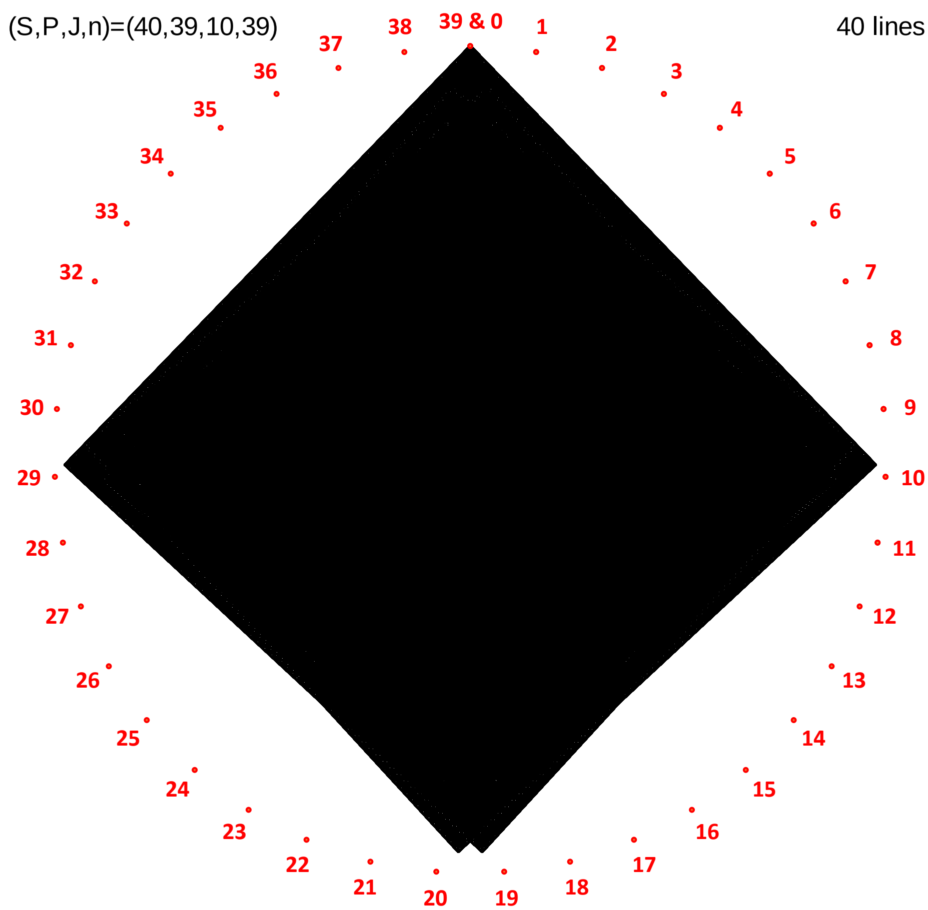
Choose the number of times you want that polygon to quiver. This will be determined by ***J***.

In the example to the right, ***J*** = 10.

Set ***S*** = ***d****J.   Here, ***S*** = 4*10 = 40.

Set ***n*** = ***P*** = ***S***-1 or ***S***+1. Here, ***n*** = ***P*** = 39.

To see why the resulting image occurred, it is helpful to consider the first four segments using the vertex labels in the graph at the right.



In this instance, ***P*** is 1 less than ***S***.

The first point is 39/40 of the way from 0 to 10 in the graph.

The second vertex is 38/40 of the way along the line from 10 to 20.

The third vertex is 37/40 of the way along the line from 20 to 30.

The 4th segment is36/40 = 9/10 of the way along the line from 30 to 1, just inside the first quadrant. This is the highest peak on the right (between, but a bit below, vertices 39&0 and 1).

The other peaks follow around in a *clockwise* oval in this instance. To verify this, click on the link below (and then click *Toggle Drawing*):

https://www.playingwithpolygons.com?vertex=39&subdivisions=40&points=39&jumps=10

If you want to have the peaks drawn in the reverse fashion, just change from ***n*** = ***P*** = 39 to ***n*** = ***P*** = 41.

If you want to see a pentagon instead of a square, simply change ***J*** to 8 (since 8*5 = 40) and you will have an image with 8 quivering pentagons.

Here is a question to test your comprehension: Suppose you want 13 triangles in your quivering triangle, and you want the peaks to be drawn in a counterclockwise oval. What values of ***S***, ***P***, ***J*** and ***n*** produce such an image? Check your answer using the Excel file or companion website.