Rules for the Chaos Game

1. Start with an equilateral triangle with vertices labeled 0, 1 and 2.
2. Choose a point $p$ inside the triangle and call it the current point.
3. Generate a random vertex number $r \in \{0, 1, 2\}$.
4. Mark the midpoint $q$ of the line joining the current point to vertex $r$ and make $q$ the new current point.
5. Repeat steps 3 and 4 a large number of times.