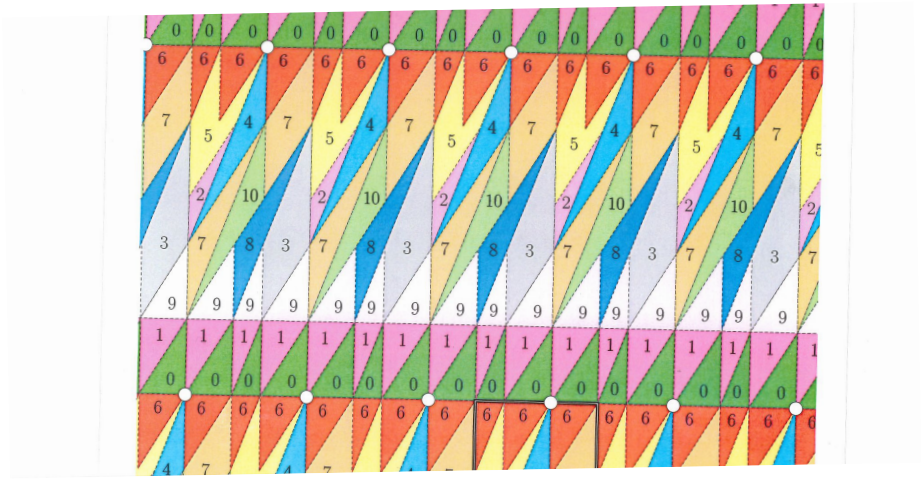
Jeandel-Rao tiling solver tutorial

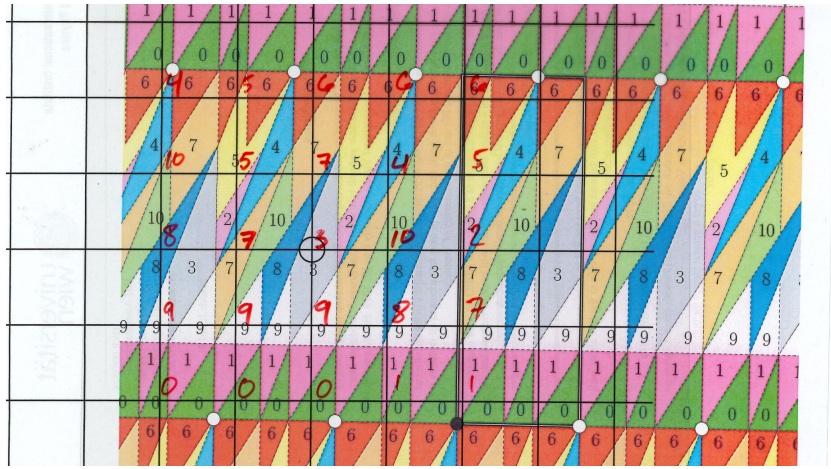
Sébastien Labbé, http://www.slabbe.org/blogue/2024/04/a-do-it-yourself-polygonal-partition-to-construct-jeandel-rao-tilings/, May 2024

Step 1. Create copies of a geometric version of the 11 Jeandel-Rao Wang tiles:

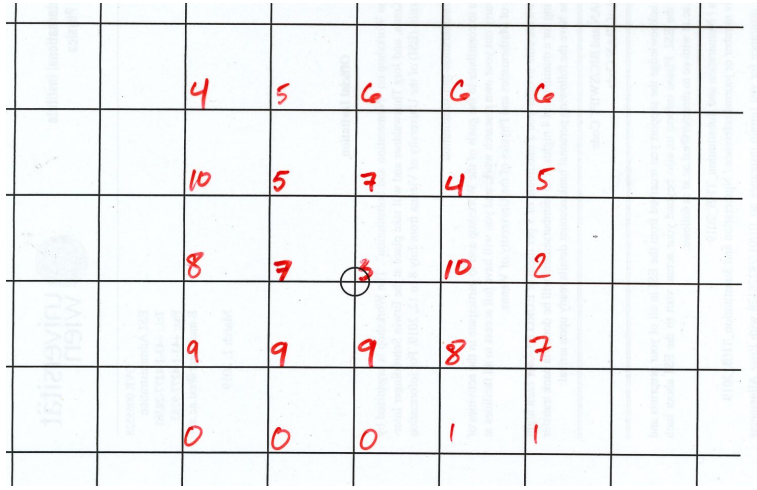
Step 2. Print the following polygonal partition (1 unit = 3cm):



Step 3. Choose a random starting point on the partition and place the origin of a lattice (1 unit = 3cm) at this point (rotation is not allowed):



Step 4. Encode each lattice point by the label of the atom of the partition it falls in:



Step 5. The above pattern encodes a valid patch using Jeandel-Rao tiles:

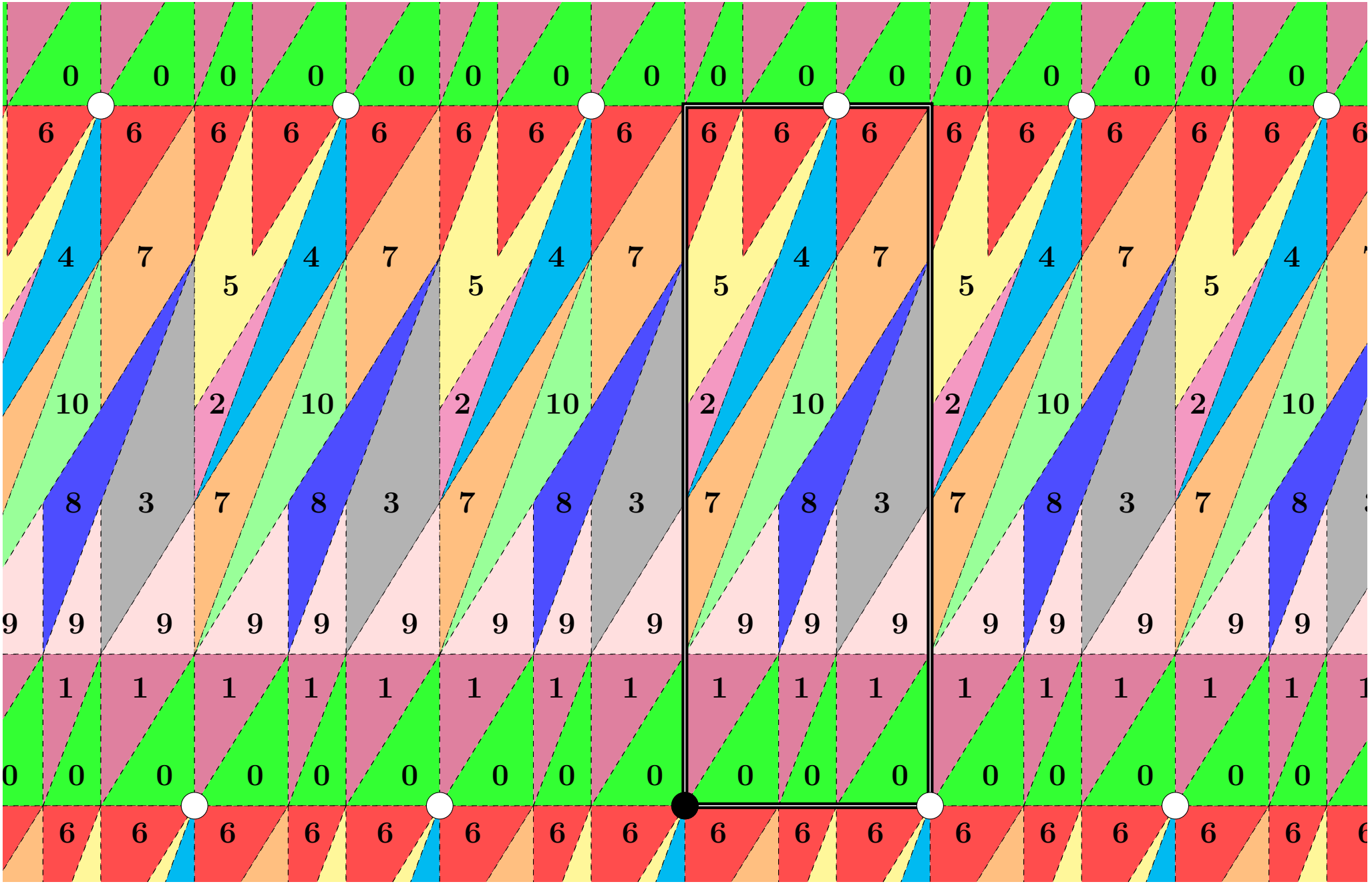
Step 6. Repeat the process and try creating larger patches.

Note. *If the tile size is the same as the lattice unit (3cm), then a tiling can be constructed without the lattice by placing tiles on top of the partition according to some arbitrary point on each tile (for example the lower left corner). This is a cut-and-project setup where the physical space and internal space unite.*

S. Labbé. Markov partitions for toral $\mathbb{Z}^2$-rotations featuring Jeandel-Rao Wang shift and model sets. *Ann. H. Lebesgue*, 4:283–324, 2021. doi:10.5802/ahl.73.

The Universal Jeandel-Rao tiling solver

1 unit = 3 cm



Reference: Sébastien Labbé. Markov partitions for toral $\mathbb{Z}^2$-rotations featuring Jeandel-Rao Wang shift and model sets. *Ann. H. Lebesgue*, 4:283–324, 2021. doi:10.5802/ahl.73