One way to form minimum perimeter polyominoes is to arrange the tiles in a square spiral, however, there are often minimal-perimeter configurations that are not formed by a square spiral.

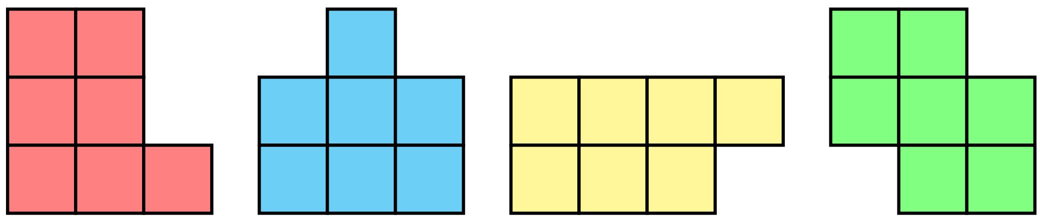

Figure 1: All A100092(7) = 4 minimal-perimeter 7-ominoes, the first of which is the beginning of a square spiral.

Question. Given (pseudo-)polyforms on some plane tiling, what is the minimum perimeter of a region containing n cells?

Note. In the case of the pseudo-polyform on a snub square tiling, a spiral does not appear to be the way to minimize the perimeter of an n-form.

Related.

1. How many such minimal-perimeter regions exist? How many regions have some sort of symmetry?
2. What is the minimum perimeter if the region must be symmetric under mirror image? Under 180° rotation?
3. What do these look like on the "ordinary" polyforms: polyominoes, polyiamonds, polyhexes, etc.
4. Next, what about the pseudo-polyforms that specifically live on the snub square tiling, truncated hexagonal tiling, and all of the fifteen pentagonal tilings?
5. What about irregular tilings like the Penrose tiling?
6. What about higher dimenional tilings, and minimizing side lengths or surface area or both?
7. What about (pseudo-)polyforms that can't cover the plane or don't correspond to a tiling (e.g. polypents)
8. What about minimizing (or maximizing) via other metrics? The perimeter of the convex hull? The sum of the angles? The number of sides touching internally?
9. What is the minimum perimeter region that can contain all free (pseudo-)n-forms? Fixed forms? How many fillings does minimal-perimeter region have?

References.

Problems 72 and 77.

`https://oeis.org/A027709`

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