It is known that trapezoids consisting of 1, 3, and 5 equilateral triangles in a line can tile an equilateral triangle.

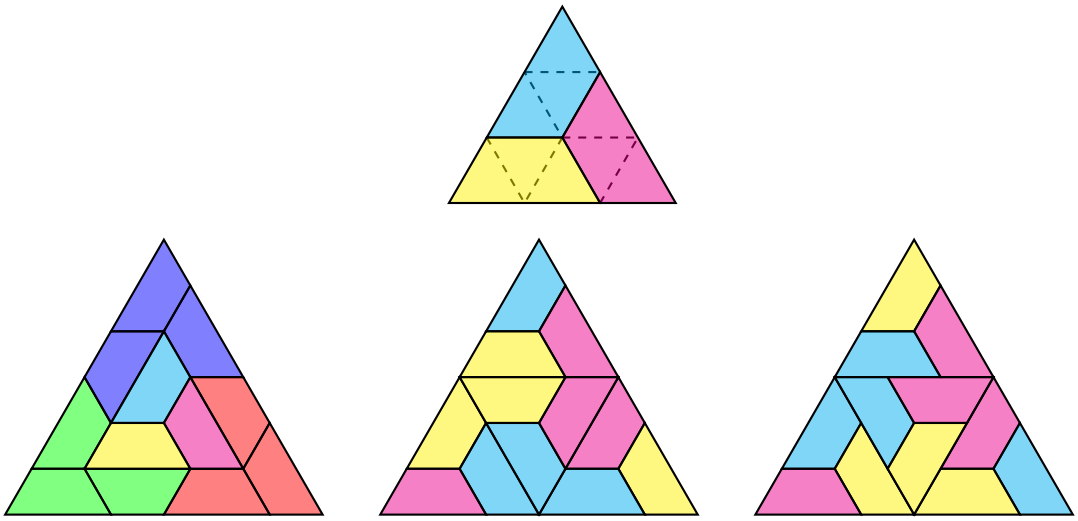

Figure 1: A equilateral triangle made of 3-trapezoids.

Question. Can all $(2n-1)$-trapezoids be arranged to form an equilateral triangle?

Related.

1. What is the smallest triangle that can be formed this way?
2. Is there a construction that makes such triangles given some k-trapezoid?
3. How many such tilings exist for a given size trapezoid and triangle?
4. Can other shapes be tiled (e.g. hexagon, arbitrary trapezoid)?
5. Does this generalize to square/hexagonal tilings? Multiple dimensions?

Note. This problem appears to have been around since at least July 2007.

References.

Problem 75

`https://math.stackexchange.com/q/2215781/121988`

`https://mathoverflow.net/a/267763/104733`