

Difficulty: 2/4 **Interest:** 4/4

A problem based on a conversation with Alec Jones. Consider a variation on the “concavity classes” of polygons as described by OEIS sequence A227910. Say that two n -gons are in the same concavity class if one can be continuously deformed into the other (or a mirror image of the other) while (1) remaining an n -gon the entire time, and (2) preserving the number of sides of the convex hull.

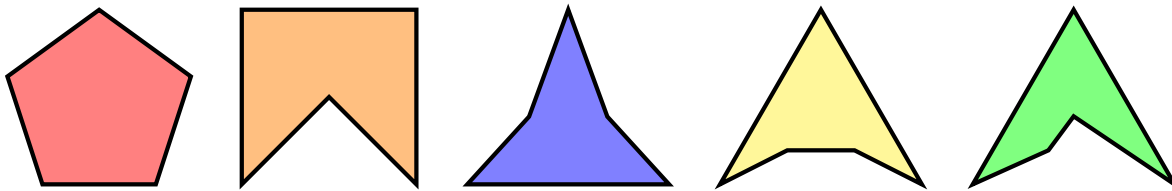


Figure 1: The $a(5) = 5$ concavity classes on the pentagon.

Question. How many convexity classes are there of an arbitrary n -gon?

Related.

1. What is the smallest square lattice that contains at least one representative of each concavity class of the n -gon for some fixed n ? (That is, the polygons must have integer coordinates.)
2. (Is this the correct definition?)

References.

<https://oeis.org/A227910>