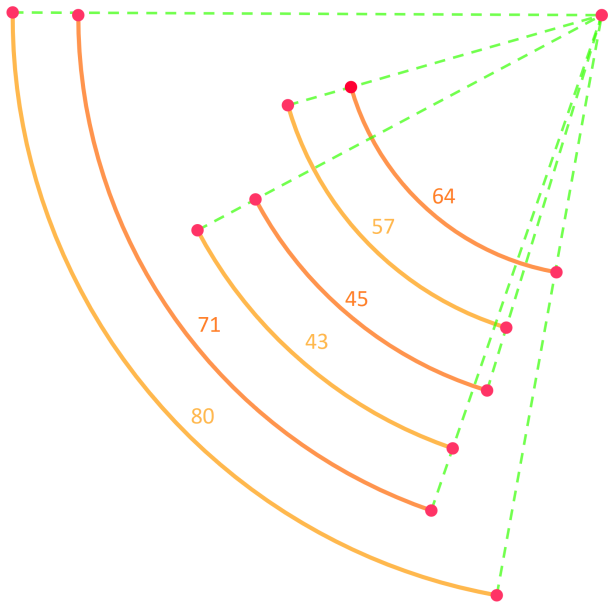
Folding Point: Solution



After folding the first image onto the 80° region, the angles laid flat look like this. In order for the picture to make sense, though, the clockwise and counterclockwise angular dispalcements must exactly cancel each other out. In other words, the sum of the angles in the clockwise direction must match the sum of the angles in the counterclockwise direction. Calculate

$$71° + 45° + 64° = 80° + 43° + 57°$$
$$62° + 63° + 56° \neq 39° + 73° + 67°$$
$$64° + 43° + 71° \neq 77° + 49° + 56°$$

Therefore the first picture is the correct answer.

This exemplifies **Kawasaki's theorem**, which says the sum of every other angle must equal the sum of the other alternating set of angles for the paper to be flat-foldable. (But Kawasaki himself called it Husimi's theorem.) This also requires **Maekawa's theorem**: the number of creases must be even.

Origami is a branch of math!