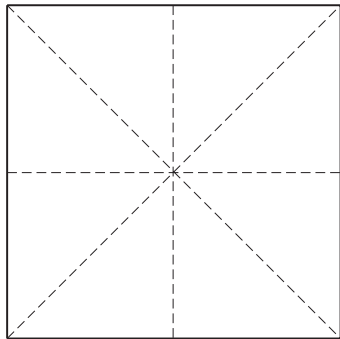


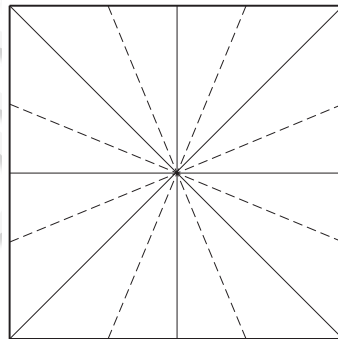
17 The regular octagon and n -gons with $n = 2^k$

17.1 The maximum regular octagon

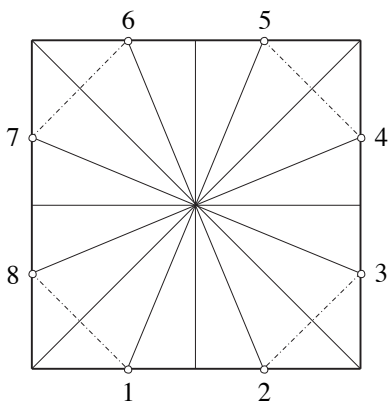
MODEL III MAXIMUM REGULAR OCTAGON



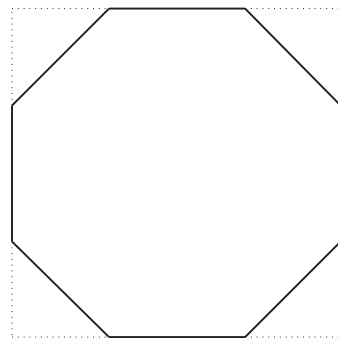
1 | fold edge to edge and unfold twice;
fold both diagonals and unfold



2 | fold each crease from step 1 to each
neighboring crease and unfold



3 | fold back lines 2 3, 4 5, 6 7 and 8 1



4 | the maximum regular octagon

The method presented here is a simple application of the fact, shown in chapter 4, that all maximum $4k$ -gons have the same incircle as the folding square, and therefore share four sides with the folding square. Steps 1 and 2 produce the diagonals of the folding square along with their angle bisectors and the crease bisecting the angles between these. Any two adjoining creases illustrated in step 2 meet at an angle of $22\frac{1}{2}^\circ$, and folding the “new” edges 2 3, 4 5, 6 7 and 8 1 therefore yields the maximum regular octagon from the folding square, which was of course already the maximum 4-gon, or square.