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The hexagonal lattice is commonly also known as ‘honeycomb structure’, especially when it is represented using a regular hexagon as its fundamental domain. Obviously, the symmetry group of the regular hexagon is the dihedral group D_6 , however, we present a fundamental domain for the hexagonal lattice that has symmetry group D_{12} (and thus a higher symmetry than the point group of the hexagonal lattice).

A complication with this 12-fold symmetric fundamental domain arises since it is a compact set obtained through an iterated function system that possesses a fractal boundary, i.e., the boundary has Hausdorff dimension greater than 1. Consequently, proving that it is indeed a fundamental domain gets quite involved: We actually show that the set in question arises as *window* in a (four-dimensional) *cut-and-project scheme* that produces a (non-periodic) square-triangle tiling of the plane (see http://tilings.math.uni-bielefeld.de/substitution_rules/square_triangle for a picture of this tiling); from this construction we are then able to infer that it is, in fact, a fundamental domain of the hexagonal lattice. (Received December 16, 2011)