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PassMapping[v_List, l_List, p_List, c_List, n_Integer, a_Integer, i_Integer] :=
PassMapping[v, l, p, c, n, a, i] =
If[Length[v ∩ l[[;; 2]]] == 1, (*Pass ends connect to opposite sides.*)
(*Value a gets mapped to.*)Mod[If[MemberQ[v ∪ Join@@c, a], If[MemberQ[c[[1]], a],
a + If[Mod[Abs@p[[1[[1]]]] - i, 2 n] > 1, 1, -1], If[MemberQ[c[[2]], a],
a + If[Mod[Abs@p[[1[[3]]]] - i, 2 n] > 1, 1, -1], (1[[{2, 1, 4, 3}]] + {-1, 1, -1, 1})[[
Position[1, If[OddQ[1[[1]] + 1[[2]]], Total@v - a, a]][[1, 1]]]], a], 2 n, 1]
(*New sign of a.*) If[MemberQ[v ∪ Join@@c, a] ∨ EvenQ@a,
If[Mod[a - i, 2 n] ≤ 1 ∨ OddQ@a ∧ ¬ MemberQ[l, a], -Sign@p[[a]], 1], Sign@p[[a]],
(*Pass ends connect to same side.)(*Value a gets mapped to.*)
Mod[If[MemberQ[v, a], SortBy[Delete[l, FirstPosition[l, #] & /@v], Mod[#, 2] &] [[
Mod[a, 2] + 1]], a + If[MemberQ[Join@@c, a], 0,
If[MemberQ[v, l[[Ordering[Mod[a - 1, 2 n, 1]][[1]]]], -1, 1]]], 2 n, 1]
(*Sign of a.*) If[OddQ@a, Sign@p[[a]] If[MemberQ[v ∪ Join@@c, a], 1, -1], 1]]];

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