Difficulty: 4/4 Interest: 2/4

Consider walks in a city, starting mid-block, where (1) at each intersection the walker goes left right or straight, (2) at each mid-block, the walker decides whether or not to turn around, and (3) she ends up back at her apartment.

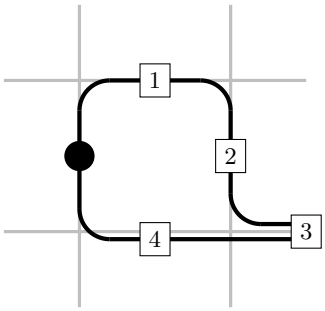

Figure 1: An example of a 5-step walk returning to the apartment.

Question. How many n-block walks can the walker take?

Related.

1. What if the walker does not want to walk along the same strip of road twice?
2. What if the walker does not want to walk along the same *side* of the same strip of road? (Suppose she always walks on the right side of the street.)
3. What if the walker never wants to revisit the same intersection?
4. How many walks up to dihedral action?
5. What if the walker does not turn around?
6. What if the walker never goes straight? Never goes right?

References.

Problem 46.