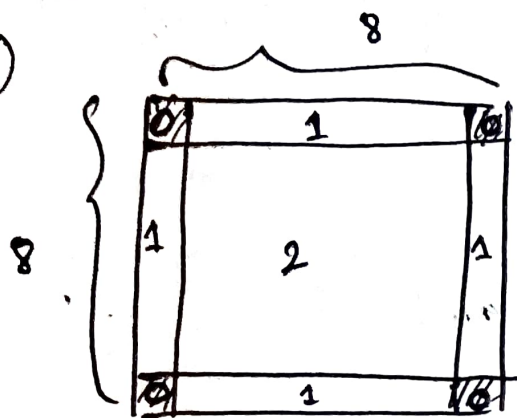④

The squares can be divided into three states

0 → corner squares

1 → edge squares

2 → Interior squares.

for each pair square (i,j)

$$P_{i,j} = \begin{cases} \frac{1}{deg(i)} & \text{if } j \text{ is a neighbour of } i \\ 0 & \text{otherwise.} \end{cases}$$

Let the stationary state be π.

So, $\pi P = \pi$

$\therefore \sum_{i} \pi_i P_{ij} = \pi_j$ · since $P_{i,j} = \frac{1}{deg(i)}$ if

j is a neighbour of i so $\pi_i \propto deg(i)$.

Total degree $= 4 \times 3 + 24 \times 5 + 36 \times 8 = 420$

↑ Corner cells   ↑ Edge cells   ↑ Interior cells

∴ for corner cells $\pi_{corner\,cells} = \dfrac{3}{420} = \boxed{\dfrac{1}{140}}$ (per cell)

For edge cells that are not corner cells

$$\pi_{edge\,cell} = \dfrac{5}{420} = \boxed{\dfrac{1}{84}} \text{ (per cell)}$$

For interior cell $\pi_{interior\,cells} = \dfrac{8}{420} = \boxed{\dfrac{1}{52.5}}$

(per cell)