1 line going to orbits of vertices of degree 8

Of the lines going to orbits of vertices of degree 4, each makes 1/4 of the total contribution of lines going into each orbit. There are four lines, representing four translational tile orbits. Thus a vertex of degree 4 generates $4 \times 1/4 = 1$ vertex orbit.

The same applies to each vertex of degree 4 and 8 in the tile type.

$\therefore n_v^2 = 4\left(\frac{1}{4}+\frac{1}{4}+\frac{1}{8}\right) = \frac{5}{2}$

Then the total no. of vertex orbits is $3/2 + 5/2 = 4$ 5/5

Generally we can say

$$n_v(\mathcal{T}) = \sum_{i=0}^{q} n_{t_i}(\mathcal{T})\left(\frac{1}{x_{1_i}} + \frac{1}{x_{2_i}} + \cdots \frac{1}{x_{n_i}}\right)$$ 22/25

Where the tiles are of type $(x_{1_i}, x_{2_i}, x_{3_i}, \ldots x_{n_i})$

And if there are tiles of type $(x_{1_j}, x_{2_j}, \ldots x_{m_j})$ where $m < n$ we set

$$\frac{1}{x_{m+1_j}} = \frac{1}{x_{m+2_j}} = \cdots \frac{1}{x_{n_j}} = 0$$