H3: We can split queens attaching each other into separate groups, where same queen must appear in the same group. Then the heuristic would be the sum of square of least cost queen’s cost in each group.

Example: attacking queens: [ (1, 2), (3, 4) ], then h3 = 1\*1+3\*3 = 10.

Proof: When move the lightest queen in one group, at most it can solve all attacking pairs in that group, but any attacking pairs in other groups can’t be solved. To solve those pairs, we must move the lightest queen in each group. And this is guaranteed to be equal or greater than h1, which is lightest queen for all attacking pairs.