1. In class, we discussed the problem of placing *k* queens in an *n x n* chessboard. In this problem, you will be considering the problem of placing *k* knights in a *n x n* chessboard such that no two knights can *attack* (it **moves** to a square that is two squares away horizontally and one square vertically, or two squares vertically and one square horizontally) each other. *k* is given and $k <= n^2$. Formulate this problem as a Constraint Satisfaction Problem. [**20 points**]
    - What are the variables?

The variables are the positions of the Knights on the n x n board, and the number of spaces on the n x n chess board.

- What is the set of possible values for each variable? [5 points]

The possible sets of value for each variable are where the knights can travel to without attacking another knight on the n x n board.

- How is the set of variables constrained? [10 points]

The set of variables is constrained by having the knight unable to attack each other, therefore, if there is a knight on the board, it restricts 2 to 8 possible spaces on the board.

2. Explain why it is a good heuristic to choose the variable that is most constrained but the value that is least constraining in a CSP search. [**10 points**]

It is good to choose heuristic based on most constrained because this allows the search space to be reduced and can lead to a faster solution. This ensures that the search focuses on variables that are likely to have the fewest options left. The least constraining value heuristic ensures that the selected value does not rule out too many options for future assignments, giving it more flexibility and can lead to a more efficient overall search.