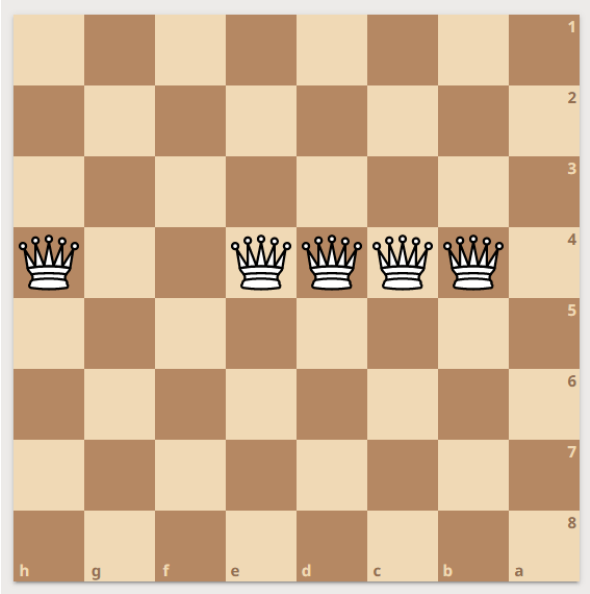
APSU Math Problem of the Week

Problem #4: Total Domination by Queens

The Queens Domination Problem consists of finding the minimum number of queens (a piece which can move horizontally, vertically, and diagonally) required to either attack or occupy every square of the 8×8 chessboard. It's been shown that at least 5 queens are needed, with an example shown on the left. Your goal is to place the fewest queens you can so that **every** space on the board can be attacked, including the squares occupied by each of your queens. The winner will be whoever can accomplish this with the fewest queens (or randomly selected from those that tie).

You can place as few as 5 queens and still be able to attack all 64 squares. The example given to you would only attack the 59 squares besides where the queens are, but if you place them strategically in a single row, column, or diagonal, all 64 squares can be covered. Here is the solution provided by our winning submission.



Feel free to take this printout, or find each Problem of the Week by scanning this:

Complete the problem each week for a chance to win a prize

Rules:

1. Any APSU student can submit a solution individually, or work can be done in a small group of 2 or 3 students.
2. Solutions must be justified when appropriate to be considered correct (but not for this problem).
3. Submissions can be made to Dr. Brad Fox (MMCS 109) or electronically to foxb@apsu.edu
4. Problems will be posted each Friday afternoon with submissions due by the following Friday at 12pm. Solutions and the weekly winner will be posted once the deadline has passed.
5. One correct submission (whether submitted individually or as a group) will be randomly chosen to win a prize such as gift cards, Galois Math Club t-shirts, and APSU CoSTEM swag, in addition to receiving the glory of having their success published on this webpage.
6. Faculty and other non-students can submit solutions, but are not eligible for prizes.