DIAGONAL PEG SOLITAIRE

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Equipment: Together with the 37-hole board on the next page, you will need a set of 28 counters (the pegs). Coins can be used although they can be hard to pick up; try dice or sugar cubes, if available. If you are online, play these puzzles interactively at
http://www.geocities.com/gibell.geo/pegsolitaire/g4g7/

Puzzle #1

Place 28 counters on the board on the shaded circles. Now jump any counter over another into an unoccupied circle, removing the counter that was jumped over. Your goal is to finish in exactly the opposite configuration, with 9 counters at the center of the board in the unshaded circles. Jumps can be made horizontally, vertically, *or diagonally.*

Puzzle #2

Place 9 counters on the board on the unshaded circles. Is it possible to make eight jumps (in the manner described above) and finish with one peg at any location on the board? Note that because of the square symmetry of the board, it suffices to show that eight finishing locations can be reached, for example d1, d2, d3, d4, c1, c2, c3 and b2. Can all eight be reached?

It is no coincidence that the ending configuration of the first puzzle is the starting configuration of the second puzzle. What interesting fact about diagonal peg solitaire on this board can be proven by combining the results of the two puzzles?

For advanced puzzlers: A **move** is one or more jumps by the same counter. What is the smallest number of moves required to solve the first puzzle? Which finishing locations on the second puzzle can be reached in only **two moves**?

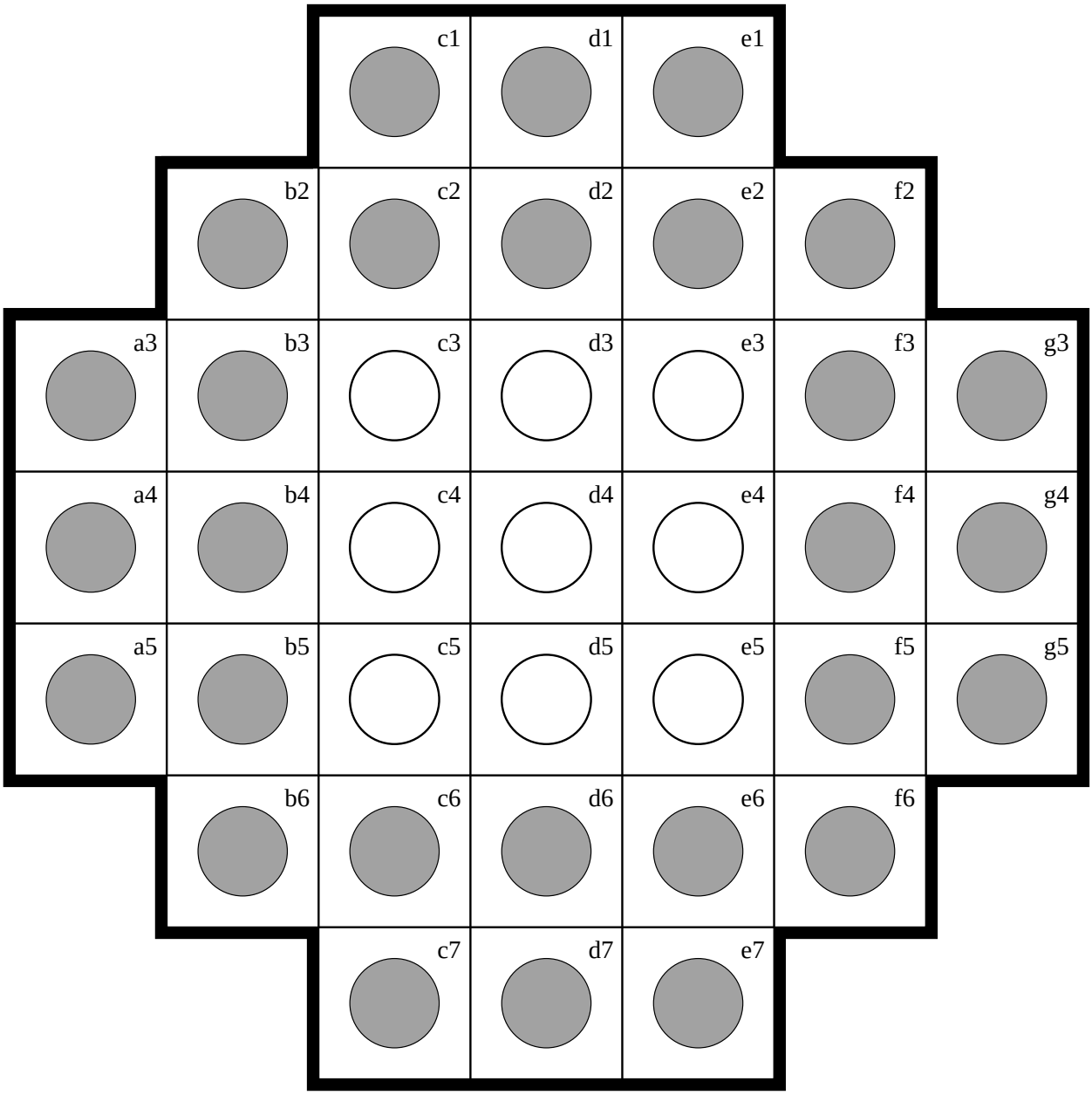

Figure 1: The 37-hole board.