Problem of the Week #7

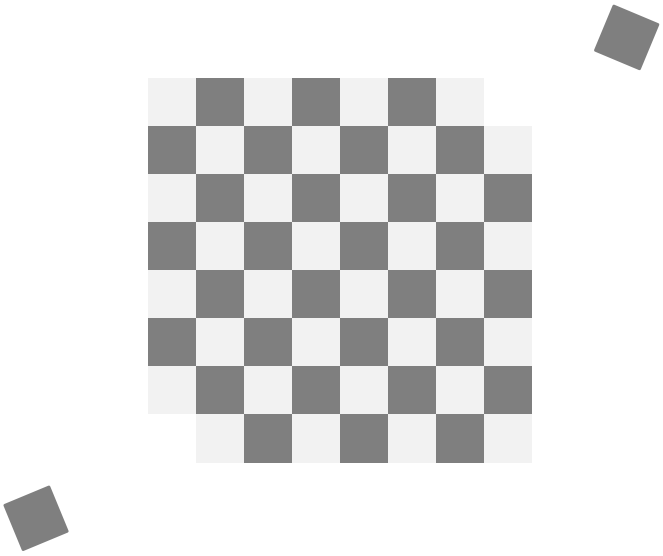
Assigned: 14 Oct 10

Due: 21 Oct 10

Dominos on a Chessboard

Given a chessboard and 32 dominos, each exactly the size of two squares on the chessboard, it is easy to show that the 32 dominos can be laid out so that the cover all 64 of the squares on the board.

Now suppose two corner squares, diagonally opposite from each other, are cut and removed from the chessboard. Is it now possible to place 31 dominos so that they cover the remaining 62 squares? Explain how it can be done or why it cannot.



Answer: It cannot be done. Each domino covers two squares, one of each color. Because the two squares removed are the same color, there is no arrangement of the 31 dominos that will cover all of the remaining squares.

Email solutions to Christopher.marks@usma.edu with subject line: POTW.

Solutions can be emailed in the form of: an email (plain text) no attachment, a word document, a mathematica file, an excel workbook, or a scanned adobe file of your work.

If none of these options work for you, you may drop a hardcopy off at my office TH239C, just annotate the time of submission.

Source: Gardner, Martin. (1959) The Scientific American Book of Mathematical Puzzles & Diversions. New York: Simon and Schuster. 24