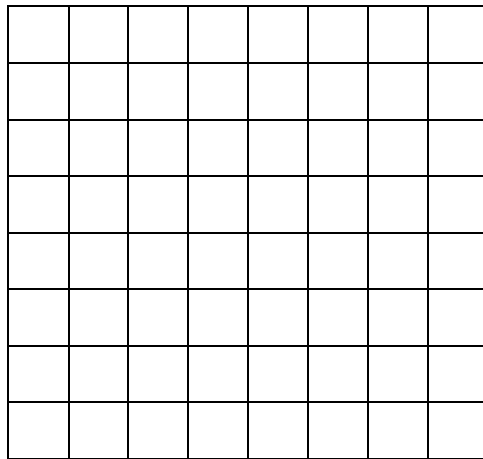


Two Tiling Problems

Anany Levitin

A Questionable Tiling

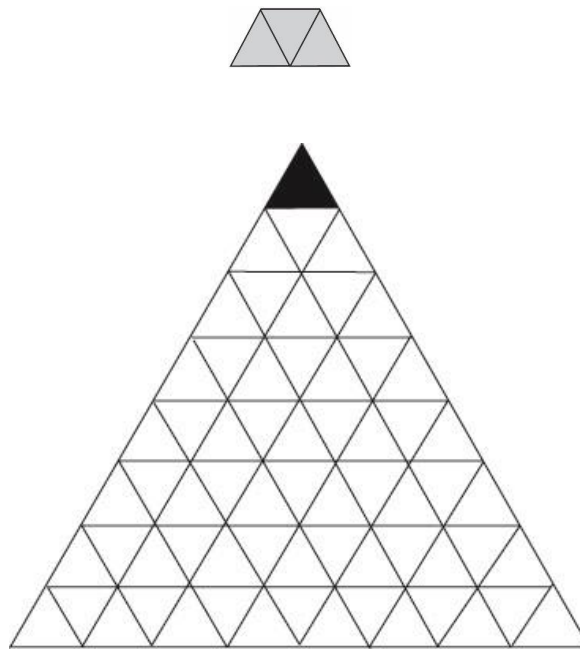
Is it possible to tile an 8×8 board with dominoes (2×1 tiles, which can be placed either horizontally or vertically) so that no two dominoes form a 2×2 square?



A solution can be found in *Algorithmic Puzzles* by Anany Levitin and Maria Levitin, Oxford University Press, 2011, p. 90.

Trapezoid Tiling

An equilateral triangle is partitioned into smaller equilateral triangles by parallel lines dividing each of its sides into 2^n equal segments where n is a positive integer. The topmost equilateral triangle is chopped off, yielding a region like the one shown below for $n = 3$. This region needs to be tiled with trapezoid tiles made of three equilateral triangles of the same size as the triangles composing the region. (Tiles need not be oriented the same way, but they need to cover the region exactly with no overlaps.) Design a divide-and-conquer algorithm for this problem.



A solution can be found in *Algorithmic Puzzles* by Anany Levitin and Maria Levitin, Oxford University Press, 2011, pp. 163–164.