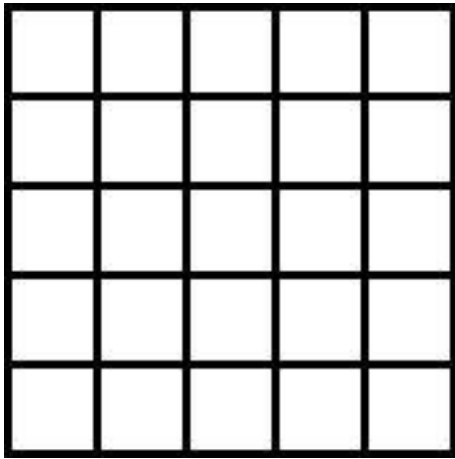# Tiling with Dominos
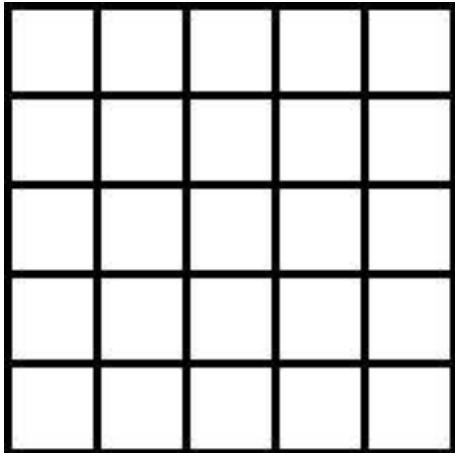
1 Tiling with dominos

We say that shapes tile a board if they completely cover the board with no overlap and no hanging off the edge.
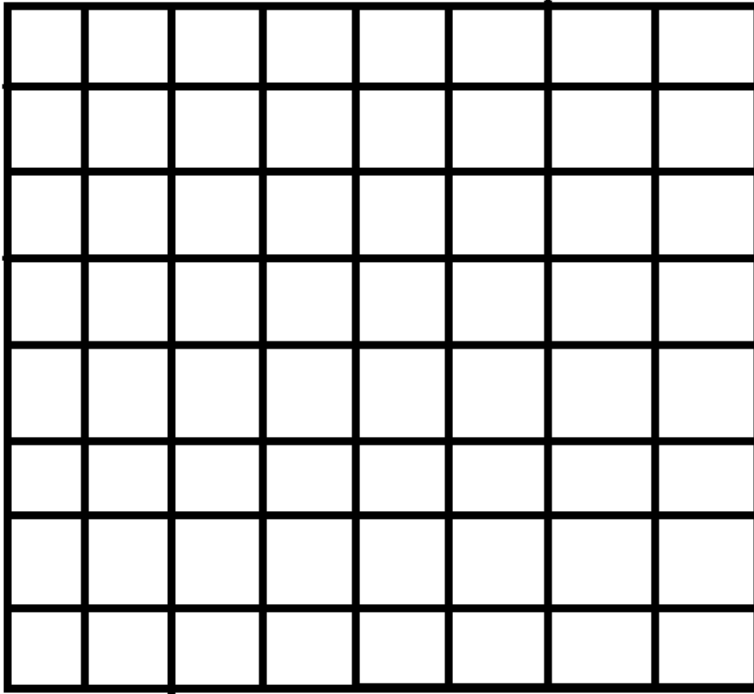
1. Is it possible to tile a 5×5 square board with dominoes?

2. Is it possible to tile with dominoes a 5×5 board from which one square has been removed? Does it matter which has been removed?
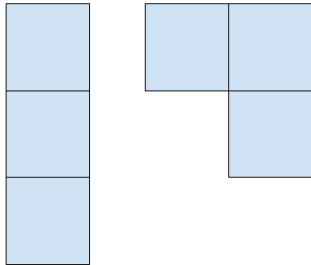
3. Is it possible to tile with dominoes an 8×8 square board from which two opposite corners have been removed?
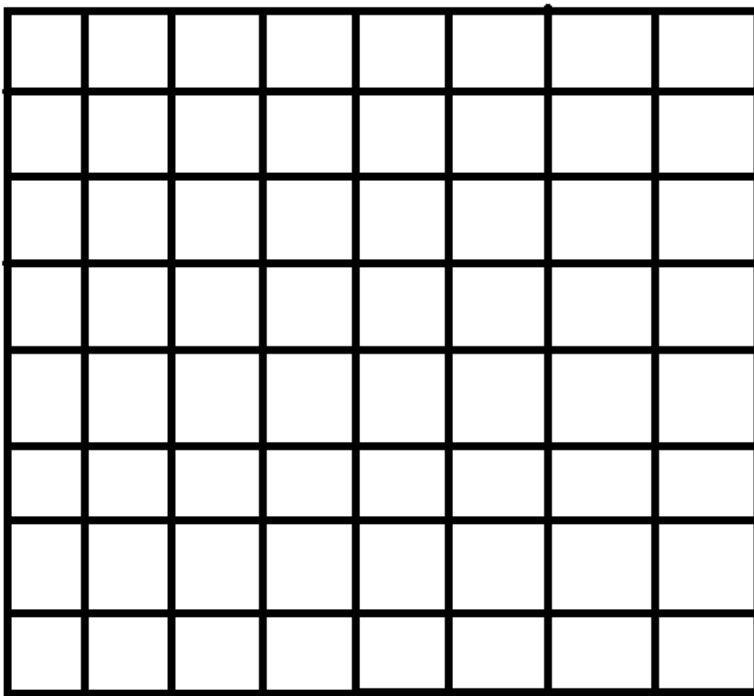
2   Triominos

A triomino is made of three squares that meet along edges. We will consider two triominos the same if we can rotate or reflect one to look like the other. There are two kinds of triominos.

4. Is it possible to tile an 8 by 8 chessboard that has one square removed by L-shaped triominoes? Does it matter which square is removed?

5. Is it possible to tile an 8×8 chess board, with one square removed, with straight triominoes? Does it matter which square is removed?

3   Tetrominos

Tetrominos are made from four squares attached along complete edges. We will consider two tetrominos the same if we can rotate or reflect one to look like the other.

6. How many different kinds of tetrominos are there? Draw them all.

7. For each of these cases, show a way to cover the board or explain why it cannot be done.

   (a) Can you tile a 20×1 board with all the tetrominoes, using each one once?

   (b) A 10x2?

   (c) A 4x5?

4   Pentominos

8. What are all the pentominoes?