Math Challenge Problem
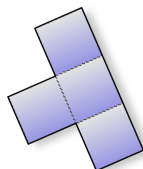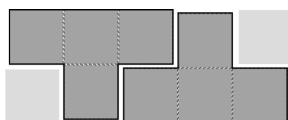
Tiling with Tetris T's

Suppose you have a large collection of identical "T" shaped Tetris tiles, like the one above. Each tile is made up of four 1×1 squares. The challenge: which $m \times n$ rectangles can you tile using these T's, without overlaps, overhangs, gaps, or cutting tiles. For example, a 2×5 rectangle is impossible:

1. Can you create a 10×10 square out of the tiles?

2. For which n can you create an $n \times n$ square out of the tiles?
   For which n is it impossible?

3. For which m and n can you create an $m \times n$ rectangle out of the tiles?
   For which m and n is it impossible?

Submit solutions to Ross 2239 or to `oscar.levin@unco.edu` by *Friday, September 30th*.
The best solution will be posted on the Math Challenge Problem webpage.

Look for a new Challenge Problem in early October.