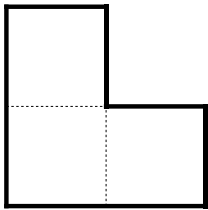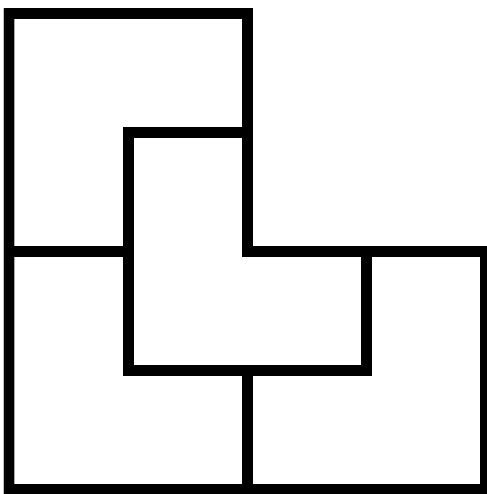# October 2022 Problem of the Month

A tile is made by combining 3 unit squares as shown below.

We can use copies of these tiles to form many shapes, including the illustration at the bottom. You are allowed to rotate the tiles any multiple of 90 degrees.

a) Show that we can make 2×3, 4×3, and 5×6 rectangles.

b) Can a 3×3 rectangle be made? Show one or explain why not.

c) Can a 5×9 rectangle be made? Show one or explain why not.

d) Is it possible to form an $m \times n$ rectangle when neither m, n is a multiple of 3?

e) What are all the rectangle sizes that can be made?

Please email solutions to Dr London at slondon@luc.edu in PDF form by 11:59 pm on October 31.