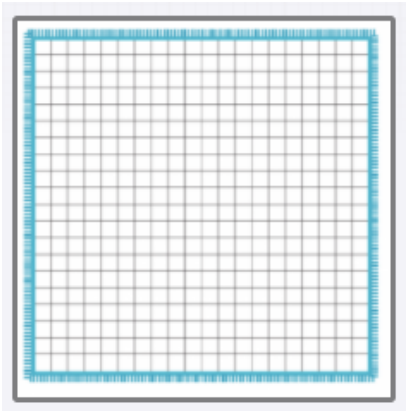
Mathletes Problem of the Week #3

Fence Me In



Zaria and Mei played the game Fence Me In. The game is played on a 20 by 20 grid. During each turn, one player rolls two six-sided dice and calculates the product of the two numbers that were rolled. This product could be considered either the area of a rectangle or the perimeter of a rectangle. The player then has to draw a rectangle on the game board with either that area or that perimeter (the side lengths must be whole numbers but they do not have to be the same as the two numbers rolled). Players take turns rolling the dice and then drawing a rectangle. If either is unable to draw a rectangle in the remaining area, the player loses a turn. Play continues until the entire board is completely filled with non-overlapping rectangles.

a) How many possible products can Zaria and Mei roll?

b) What is the area of the largest possible rectangle that can be drawn during a turn in this game?

c) What is the minimum number of rectangles it could possibly take for Zaria and Mei to completely fill the game board?

Solutions & Explanations: (Solve one or solve them all. Attach more paper if you need to!)

Name _____ **Class** _____

(First and last name, please!) **Solutions due: June 1st**