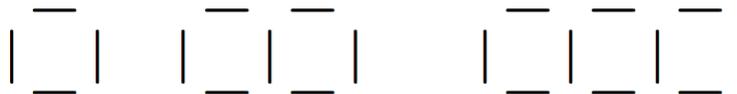


## QUESTION FOR JOURNAL ENTRY # 4

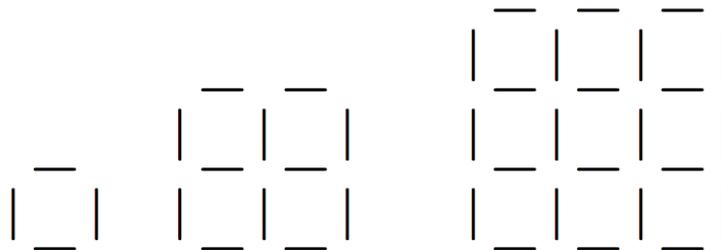
TUESDAY, OCTOBER 19, 2010

This is from Chapter 5 from 'Thinking Mathematically.' I recommend that you read the section (and really all of the discussion in chapters 1-4).

Say that you are using matchsticks to make squares such that the matches can lie next to each other but may not overlap. Put them in the following sort of diagram to make a line of squares. How many matches do you need to make  $N$  squares? If you have a good answer you should be able to tell me how many matches are required if you have 14 squares.



How many matches are required to make  $N \times N$  unit squares in a square array as in the following sequence? If you have a good answer you should be able to tell me how many matches are required for a  $14 \times 14$  array.



Now generalize this picture to ask how many matches does it take to make an array with  $M$  rows and  $N$  columns? Consider the cases when  $M = 1$ . Do you get the answer for the line of squares? Consider the case when  $M = N$ . Do you get the answer for the sequence of  $N \times N$  array of squares?