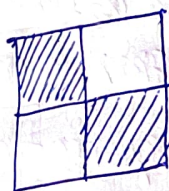


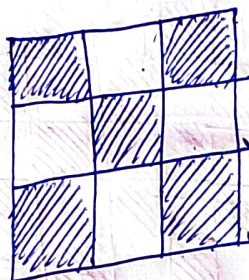
Prob 16a: What is the largest number of squares on an 8×8 checkerboard which can be colored green, so that in any arrangement of three squares (a tromino), at least one square is not colored green? (The tromino may appear as in the figure, or it may be rotated through some multiple of 90 degrees).



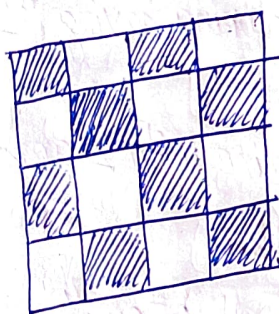
Strategy



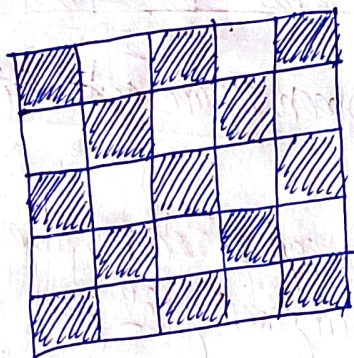
$2 \times 2 : 2$



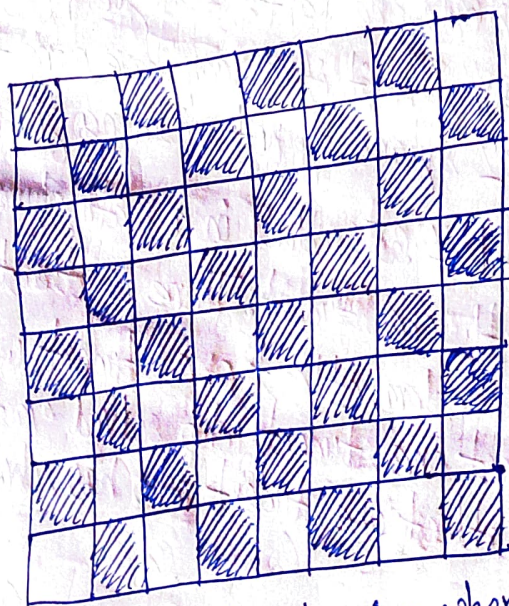
$3 \times 3 : 5$



$4 \times 4 : 8$



$5 \times 5 : 13$



$8 \times 8 : 32$

I will try to show that ~~32~~ 32 is the optimal answer, i.e. if any of the 33 squares is colored green, then we are guaranteed to get a tromino where every square is green.

So, when 32 of the squares is colored green following any particular strategy which satisfies the given condition, we need to show that for each non-green square, it's part