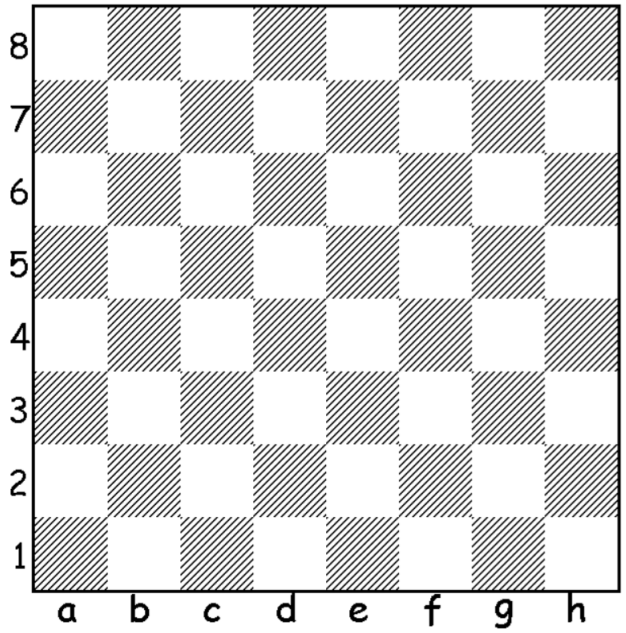
Fun and Games on a Chess Board

I Names of squares on the chess board

Color the following squares on the chessboard below:

c3, c4, c5, c6, d5, e4, f3, f4, f5, f6



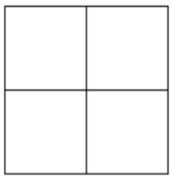
What letter do these squares form together?

II How many squares are there on a chessboard?

A chessboard itself is a square with side 8.

1. The number of 1×1 squares on the chess board is $\square$.

2. What about bigger squares?
   Let's first count squares of size 2×2:



   Idea: *Instead of counting* 2×2 *squares, we will count the small* 1×1 *squares which can serve as the left lower corners of the* 2×2 *squares that fit on the chessboard.*

   First, shade the left lower corner of the 2×2 square above.

For each of the squares below, decide if it can be a left lower corner of a 2×2 square:

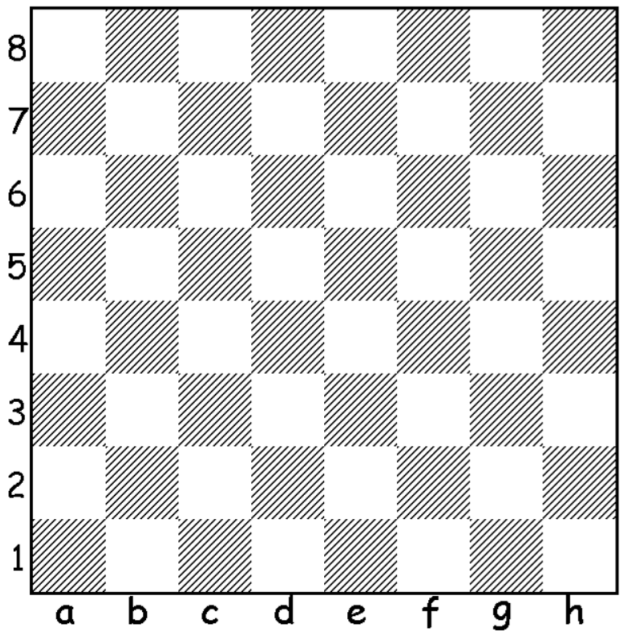
(a) square c3 Yes No

(b) square g6 Yes No

(c) square f8 Yes No

(d) square h2 Yes No

Now color *all* 1×1 squares that can serve as the left lower corners of a 2×2 square:



How many 2×2 squares can you fit onto a chessboard?

3. For each of the squares below, decide if it can be a left lower corner of a 3×3 square:

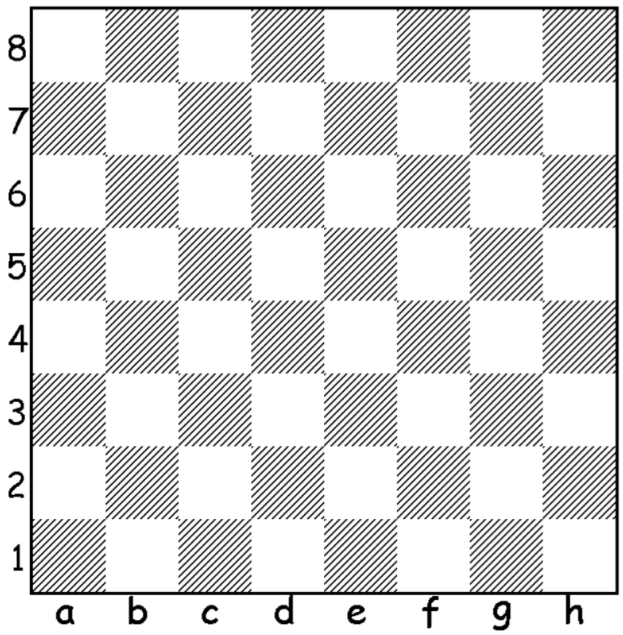
(a) square e6 Yes No

(b) square g3 Yes No

(c) square a7 Yes No

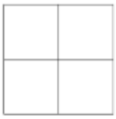
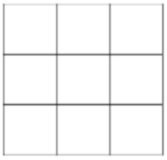
(d) square f6 Yes No

Now color *all* 1×1 squares that can serve as the left lower corners of a 3×3 square:



How many 3×3 squares can you fit onto a chessboard?

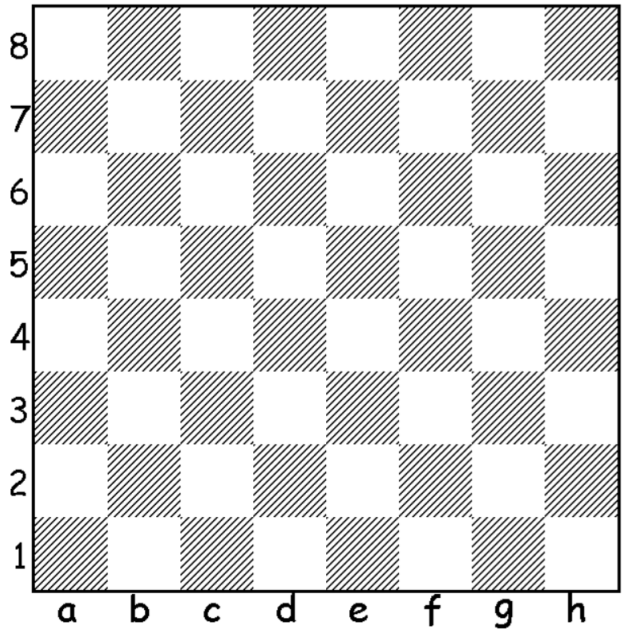
Now you can fill out the table below:

Type of Square	Number of such squares
	
	
	

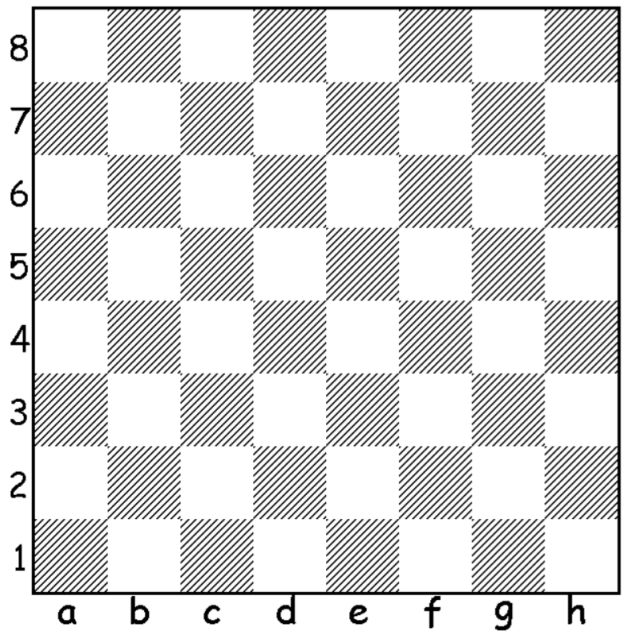
Homework

Count the number of 4×4, 5×5, 6×6 and 7×7 squares on the chessboard in the same way. In each case, use a chessboard picture to shade all the 1×1 squares that can be left lower corners of the bigger squares that fit completely onto the chessboard.

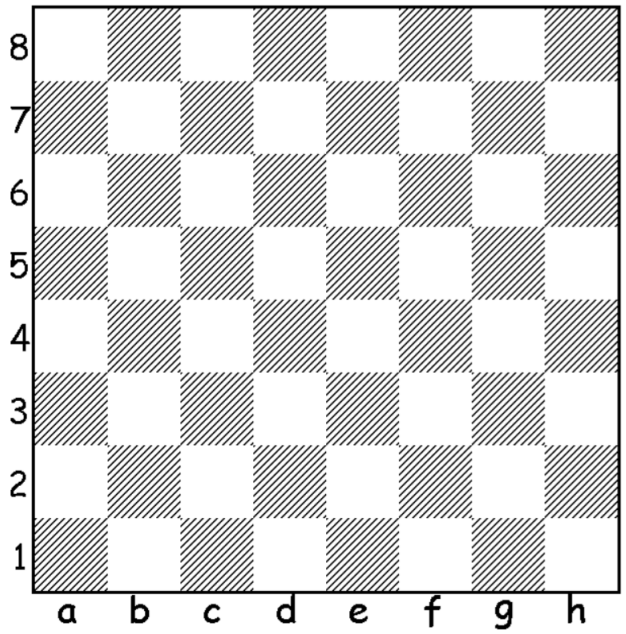
Now color *all* 1×1 squares that can serve as the left lower corners of a 4×4 square:



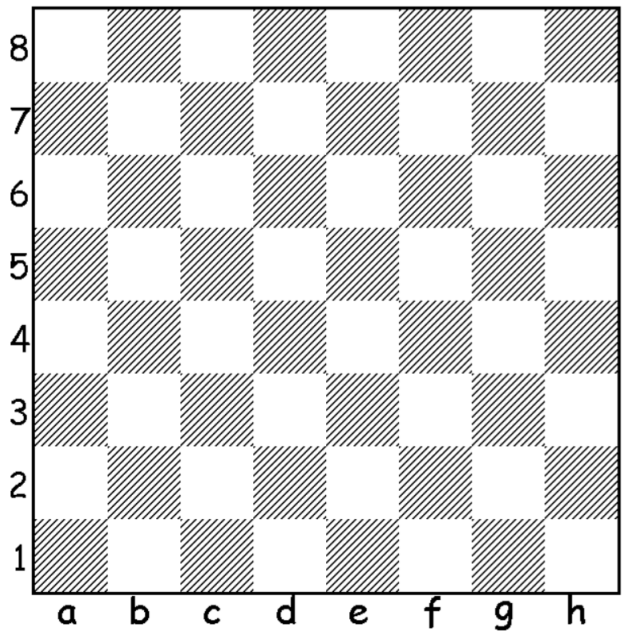
Color all 1×1 squares that can serve as the left lower corners of a 5×5 square:



Color all 1×1 squares that can serve as the left lower corners of a 6×6 square:



Color all 1×1 squares that can serve as the left lower corners of a 7×7 square:



Color all 1x1 squares taht can serve as the left lower corners of a 8x8 square: