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 $1 \times 1$ squares on the chess board is $64$.

2. What about bigger squares?
   Let’s first count squares of size $2 \times 2$:
   
   Idea: Instead of counting $2 \times 2$ squares, we will count the small $1 \times 1$ squares which can serve as the left lower corners of the $2 \times 2$ squares that fit on the chessboard.

   First, shade the left lower corner of the $2 \times 2$ square above.
For each of the squares below, decide if it can be a left lower corner of a $2 \times 2$ square:

(a) square c3  
Yes  No

(b) square g6  
Yes  No

(c) square f8  
Yes  No

(d) square h2  
Yes  No

Now color all $1 \times 1$ squares that can serve as the left lower corners of a $2 \times 2$ square:

How many $2 \times 2$ squares can you fit onto a chessboard?

$7 \times 7 = 49$
3. For each of the squares below, decide if it can be a left lower corner of a $3 \times 3$ square:

(a) square e6

(b) square g3

(c) square a7

(d) square f6

Now color all $1 \times 1$ squares that can serve as the left lower corners of a $3 \times 3$ square:

How many $3 \times 3$ squares can you fit onto a chessboard?

6x6=36
Now you can fill out the table below:

<table>
<thead>
<tr>
<th>Type of Square</th>
<th>Number of such squares</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>36</td>
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