

How Many Squares are in a Checkerboard?

NAMES:

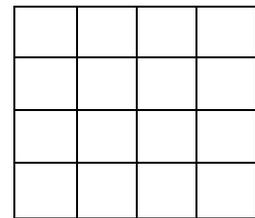
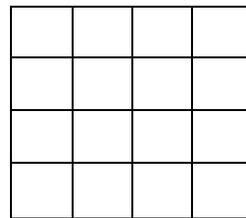
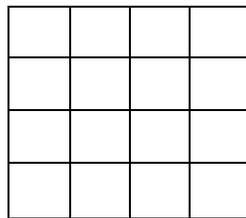
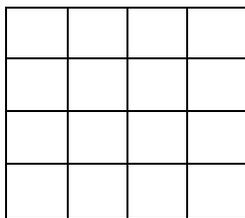
We will answer this classic question by looking at similar boards that are smaller than an 8x8 board first. Complete the table on the next page as you answer the questions.

1. How many squares are in a 1x1 board? Draw it.

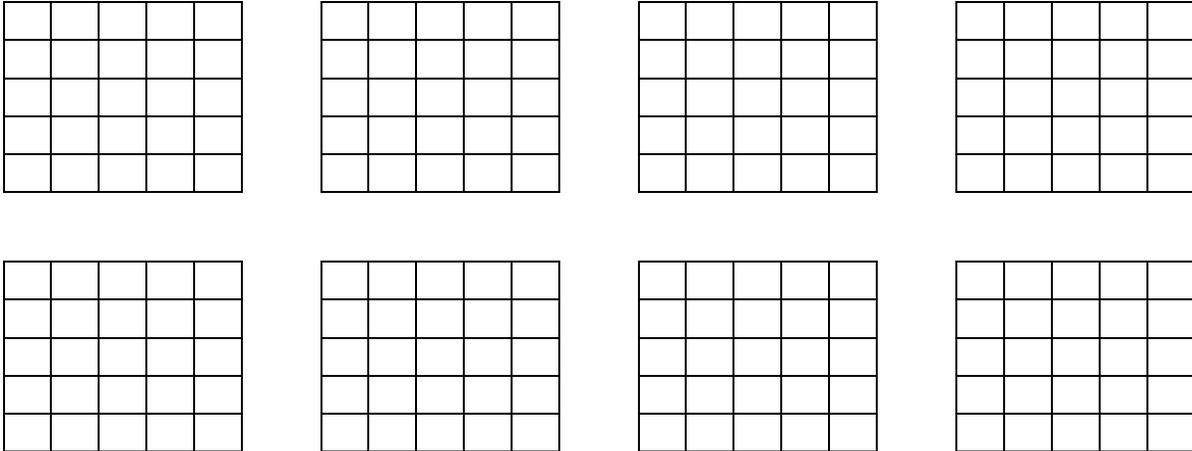
2. How many squares are in a 2x2 board? Draw it and mark the squares off. [Hint: There are more than 4.]

3. How many squares are there in a 3x3 board? Draw it and mark the squares off.

4. Below are a few 4x4 boards. How many squares can you find? Use the boards to mark off the squares in an orderly way. [I drew more than one board to help you mark them off, not to imply you are adding the squares for all of the boards.]



5. Below are a few 5x5 boards. How many squares can you find? Use the boards to mark off the squares in an orderly way. [I drew more than one board to help you mark them off, not to imply you are adding the squares for all of the boards.]



6. Complete the table as you proceed through the worksheet. Do you see a pattern? Use it to fill in the table for the 6x6, 7x7, and 8x8 boards.

| | Sizes of Possible Squares | | | | | | | | Total |
|---------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|
| | Count how many of each size square the board has. | | | | | | | | |
| Size of Board | 1x1 squares | 2x2 squares | 3x3 squares | 4x4 squares | 5x5 squares | 6x6 squares | 7x7 squares | 8x8 squares | |
| 1x1 | | | | | | | | | |
| 2x2 | | | | | | | | | |
| 3x3 | | | | | | | | | |
| 4x4 | | | | | | | | | |
| 5x5 | | | | | | | | | |
| 6x6 | | | | | | | | | |
| 7x7 | | | | | | | | | |
| 8x8 | | | | | | | | | |

7. Exploring smaller, related problems helps us see a pattern that we can use to answer the intended question. So how many squares are on an 8x8 checkerboard?