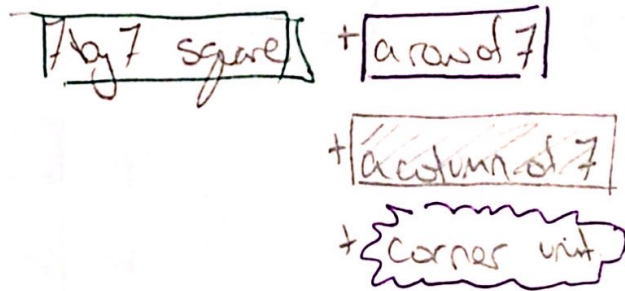
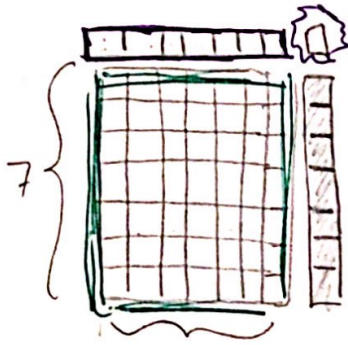
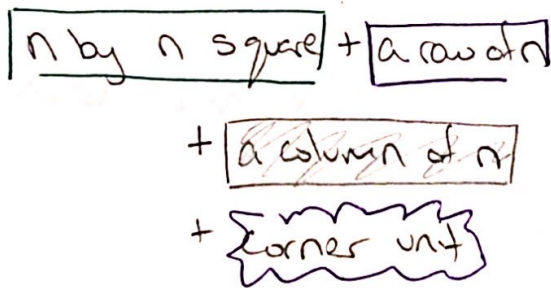


Lets first work thro one of the examples that the student gave us. Specifically, to get from  $7^2$  we add 7 and the next integer (8). So  $7^2 + 7 + 8 = 49 + 7 + 8 = 56$ . Visually this is



Notice the row of 7, column of 7, and the corner piece are exactly what we need to build the next size square,  $64 = 8^2$ .

This works generally? Consider the integer  $n$ , we will show how to get from  $n^2$  to  $(n+1)^2$  (ie, the square of the next number). Lets repeat the visual



since  $n$  can be any positive integer we'll draw the square with some dots

The same reasoning (visually constructing the next biggest square) works?

(As an aside this is algebraically captured by  $(n+1)^2 = n^2 + n + n + 1$  or the more familiar  $(n+1)^2 = n^2 + 2n + 1$ )