QUSTION FOR JOURNAL ENTRY # 2

TUESDAY, SEPTEMBER 20, 2010

From Mason, et. al. "Thinking Mathematically" 2^{nd} edition p. (Revised edition p. 19).

It was once claimed that there are 204 squares on a chessboard. Can you justify this claim?

I won't include all of the discussion on this problem in this posting, but I will make a few comments.

A chessboard is a grid consisting of 8 rows and 8 columns. The immediate reaction is then to say that there are 64 squares on the chessboard. Where are they coming up with 204?

If you don't know how to attack this problem, begin by counting the number of squares on a smaller chessboard. Also try to count the number of 2×2 squares, 3×3 squares, etc.

The discussion in the book gives an expression for the number of squares of an 8×8 chessboard as $1^2 + 2^2 + 3^2 + \cdots + 8^2$. You should be able to explain clearly and in your own words why that is the case. You should also come up with an expression for the number of squares in an $n \times n$ chessboard where n is any positive integer.