Problem of the Week

Problem C

Cover Up

Sara Mictile has an unlimited supply of square tiles. Sara has 1 cm by 1 cm tiles, 2 cm by 2 cm tiles, 3 cm by 3 cm tiles, and so on. Every tile has integer side lengths.

A rectangular table top with an 84 cm by 112 cm surface is to be completely covered by identical square tiles, none of which can be cut. Sara knows that the table can be completely covered with 1 cm $\times$ 1 cm tiles, 9408 in total, since $84 \times 112 = 9408$ cm^2. However, Sara wants to use the minimum number of identical tiles to complete the job in order to reduce the overall material cost.

Determine the minimum number of identical tiles required to completely cover the table top.