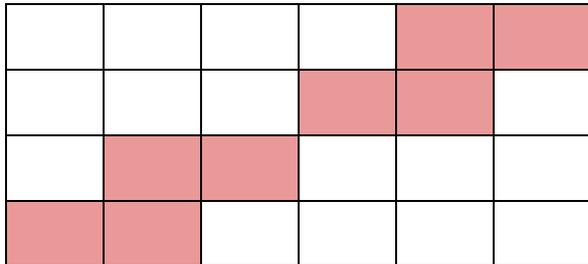


The king is planning a new rectangular courtyard in the palace, which will be laid out using square tiles. He has chosen some very pretty, but very inexpensive tiles. However, his advisor has informed him that some of the tiles will have to be a more expensive type.

You see, visiting dignitaries will always walk along a certain diagonal, from one corner of the courtyard to the opposite corner, so the tiles along the diagonal will get lots of wear and tear. Therefore, those tiles must be more durable (and hence more expensive). That is, every tile that contains a segment of the diagonal must be an extra-strength, expensive tile. (If a tile touches the diagonal only at a corner, it can be a regular tile.)



For example, the diagram above shows what the situation would look like if the king made a 4x6 courtyard. In this case, 8 tiles (shaded pink) include some portion of the diagonal, so these would need to be the more expensive kind.

The king wants to know how many of these special tiles he needs to order. At the moment, he is planning to have a 63x90 courtyard. That is, he will have 63 rows of tiles and 90 tiles in each row.

If he stays with this plan, how many special tiles will he need?

The king keeps changing his mind about the dimensions of the courtyard, so it would be especially helpful if you could find a general formula for him.

Suppose the courtyard has r rows with c tiles in each row. How many special tiles will the king need? (The example illustrated in the diagram, which required 8 special tiles, was the case $r=4$ and $c=6$.)

In this problem we were supposed to find the hypotenuse of a triangle given the two legs, then find the amount of bricks that need to be special to do that all you need to do is create a graph like is done above (I would have drawn a picture but those sides are way too long :)



the triangle is 63,90,110 so now all that needs to be done is draw the triangle on a graph to determine the length. Next I did the (painful and long) process of drawing the triangle and shading in the squares, my soul may never recover from the process. I'm joking of course, it

sounds much worse than it was. It wasn't painful but it was long. I found the answer to be 5670 total tiles or 144 expensive tiles. I think I should get a B on this POW because, even though I submitted it a bit late, I am confident in my answer and sure that I am right. :)

Write-Up

Problem Statement

Visual Representation

Process

Solution

Evaluation

Self-Assessment