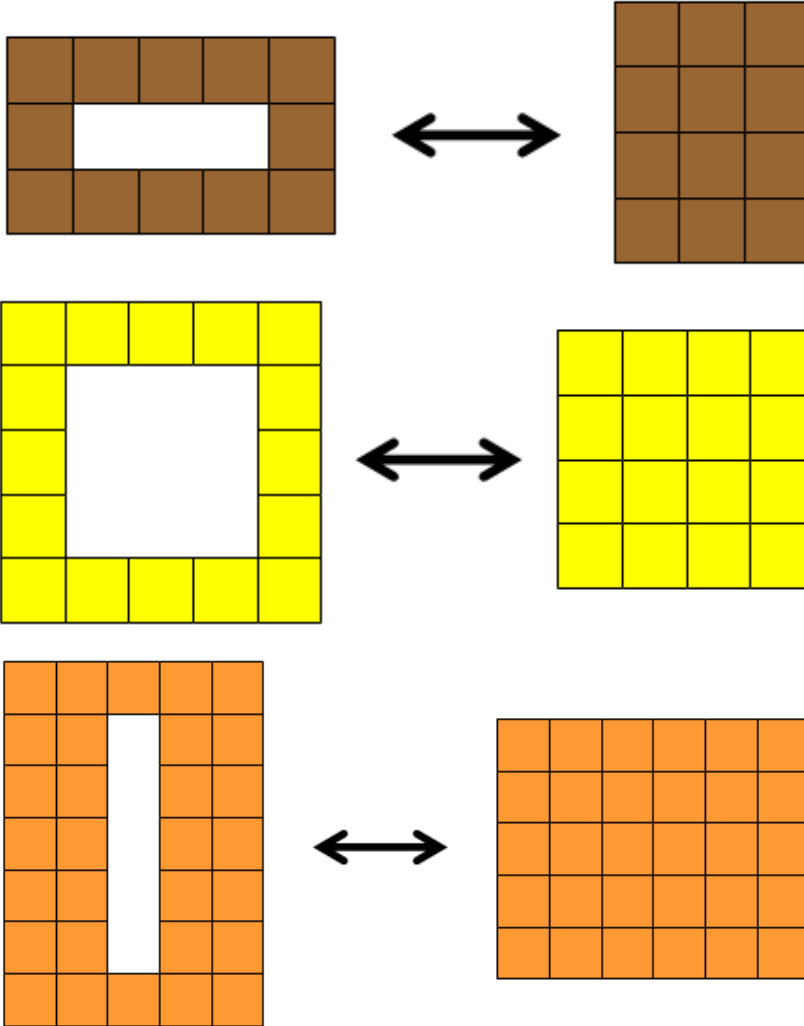
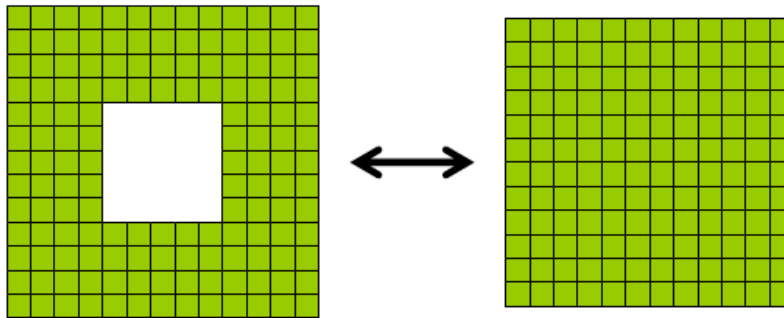


Quilt Mending

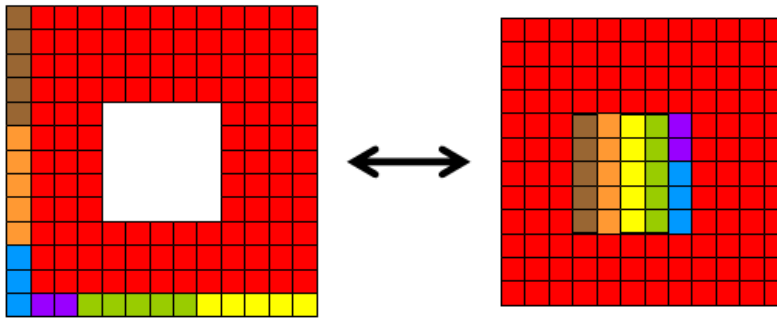
The Queen has left Quinton with a palace full of quilts she damaged during sword practice. In each case what is the fewest number of pieces that Quinton must cut the holed quilt on the left to make the rectangular quilt on the right?



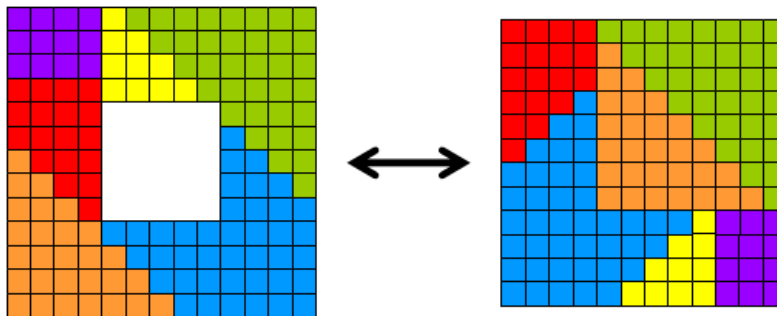
For example, Quinton first thought that to fix the holed green quilt on the left...



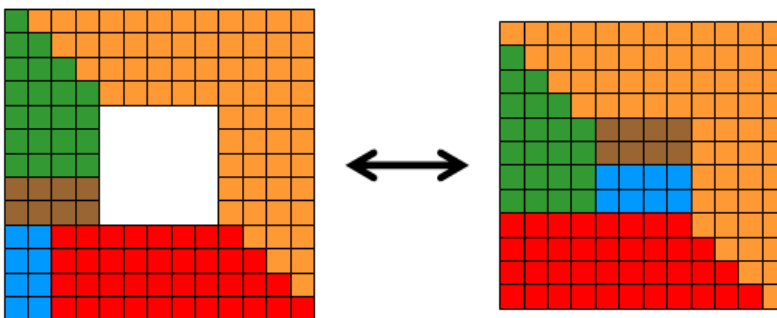
he needed to cut it into 7 pieces to make the square on the right.



But then Quinton realized he could do it with just 6 pieces:



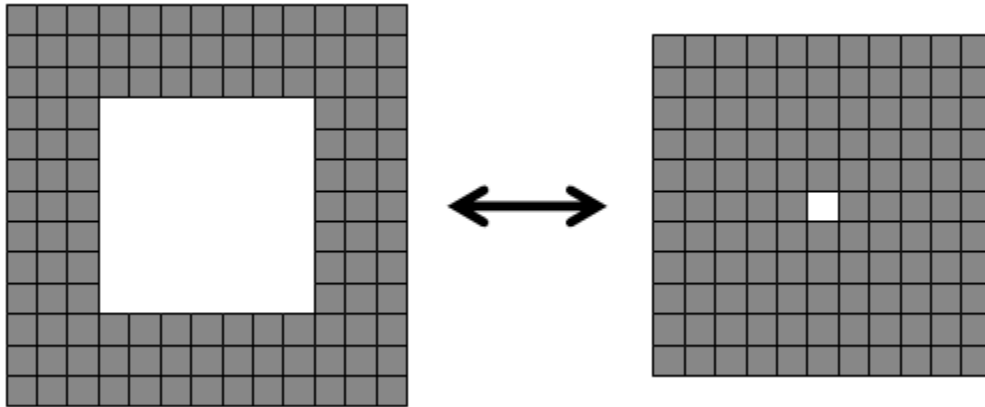
And just as he was lifting his scissors, he realized he could do it with only 5 pieces:



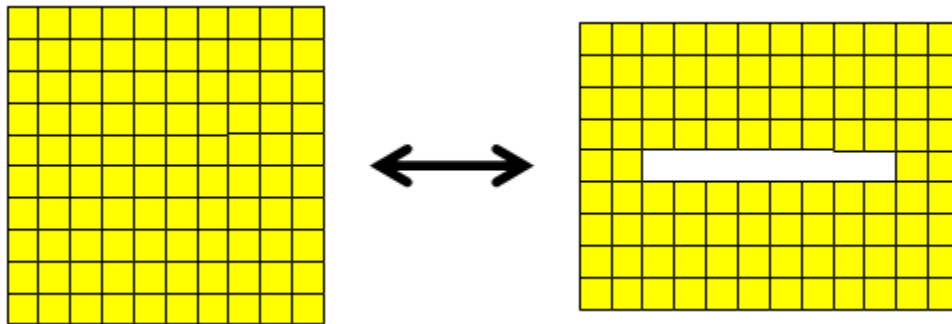
Quinton doesn't know if this is best, but he couldn't do any better.
For the first three quilts he knows an answer that cannot be improved upon.

Extensions:

- Which square quilts with a square hole in the centre can be fixed so that a new square is made? For example, the quilt on the left can nearly be fixed, but not quite. (Quinton put a large vase on top of the small hole so nobody notices)



- Find your own holed quilt and have a competition among your friends who can fix it with the fewest pieces.
- Quinton had a lot of trouble trying to fix this carpet, but eventually managed to do it with just 2 pieces!



The Math in This Problem:

In this investigation, students will analyze squares of various sizes. Each square must be transformed into a different one, while the goal is to move the least number of units possible. By progressing through Quilt Mending, students will be engaging in the notions of efficiency and productivity, which are assets in our economy.