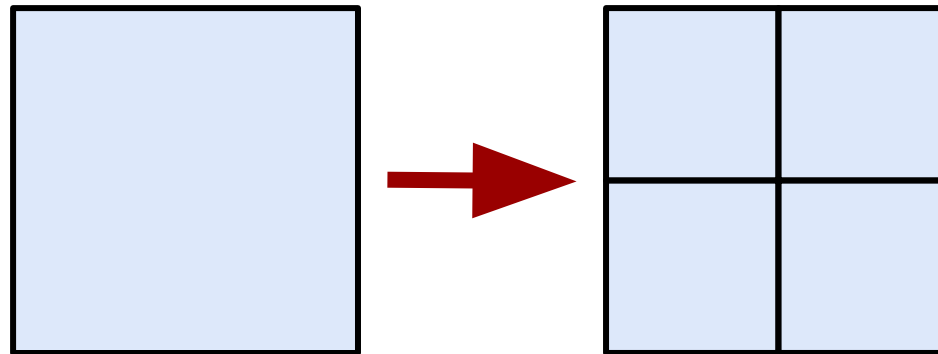




Squareland

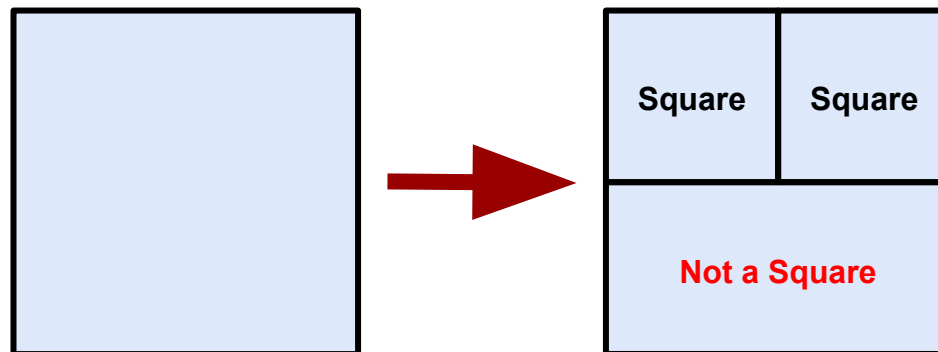
Objective: Divide a square into a certain number of smaller squares.



One square is divided into four squares. Note that this is **not** dividing one square into five squares, because the outside square doesn't count.

Important Things to Keep in Mind:

1. Make sure that *every* shape is a square.



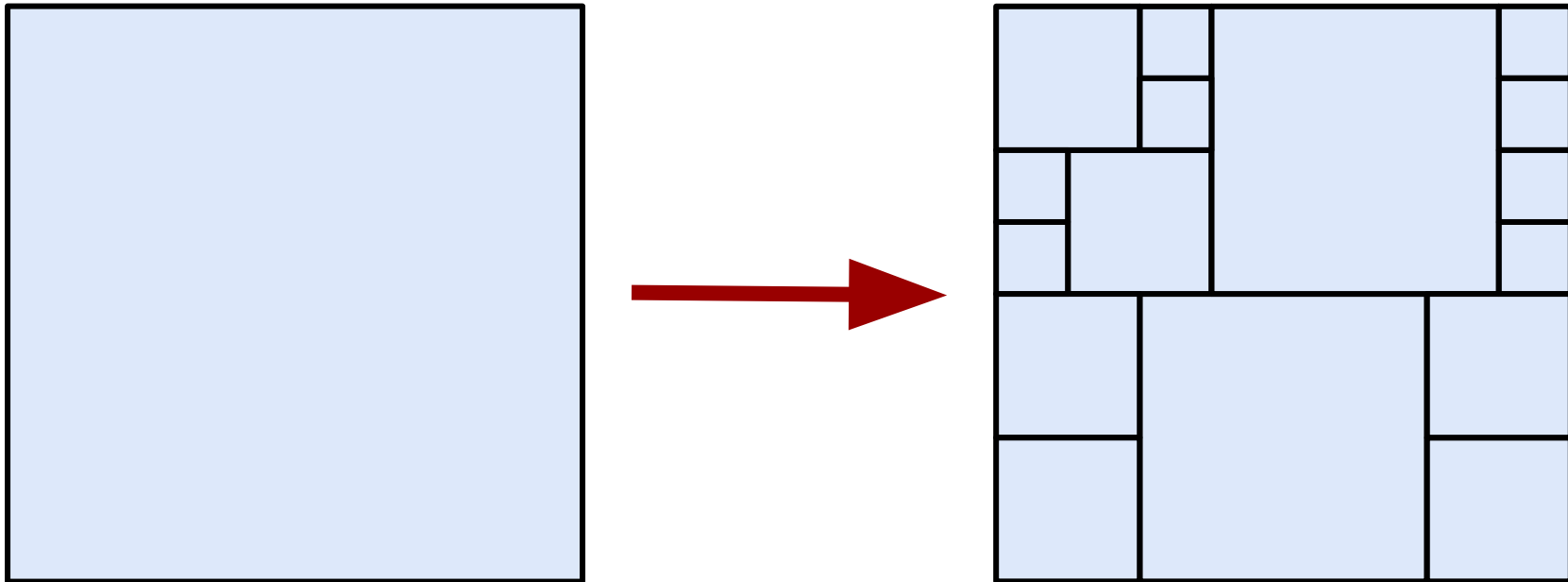
The drawing above **does not** count as a solution for two squares because you need to use the entire space for the squares.



Squareland

Important Things to Keep in Mind:

2. Be creative! Below is a creative way to divide a square into 16 squares.



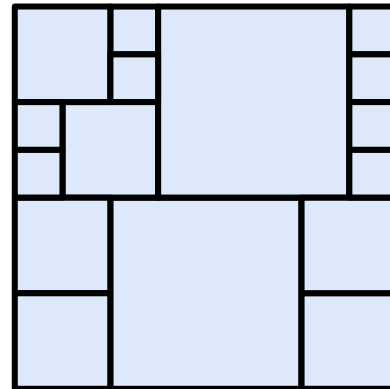
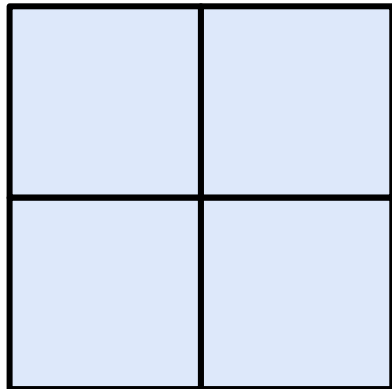
3. Things can get complicated quickly. Be ready to confirm that all of your smaller squares really are squares.



Squareland

Questions:

1. You've seen an example of dividing a square into 4 squares and 16 squares. Can you divide a square into a different number of squares? Try to do this with a few different numbers of squares.

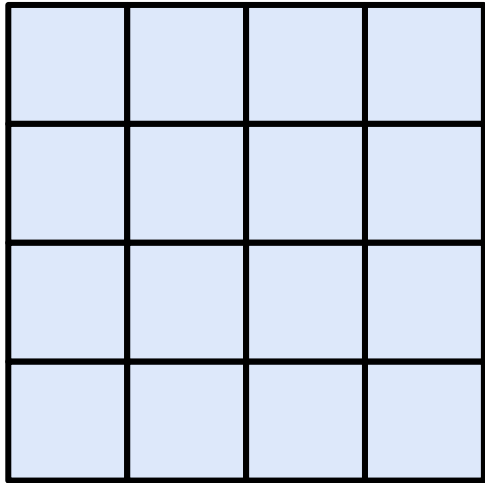


2. Is it possible to divide a square into 9 squares? 10? 11?
3. Can you find a number of squares for which it is impossible to divide a square? Can you find all impossible numbers?
4. Can you find all of the numbers of squares for which it is possible to divide a square?
5. Julia Robinson was born in 1919. How would you divide a square into 1919 squares? Can you find an efficient way to do it?

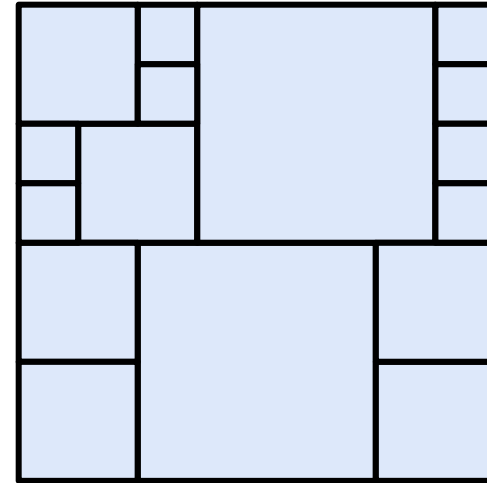


Challenge Questions:

Below are two different ways to divide a square into 16 squares.



16 same-sized squares



2 large squares
6 medium squares
8 small squares

1. Can you divide a square into 16 squares in a third, different way?
2. How many different ways can you divide a square into 16 squares?
3. For any number n , how many ways can you divide a square into n squares?