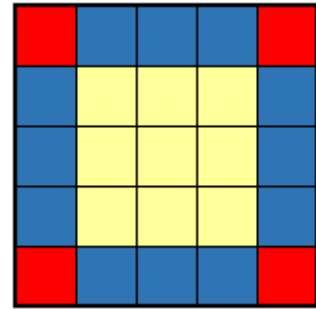# Tile Patterns Investigation

A square floor is to be covered in coloured tiles.
*One colour will be used for the corner tiles, another
for the edge tiles and a third for the middle tiles.*

All corner tiles will be red.
All edge tiles will be blue.
All middle tiles will be yellow.

Use the space below to investigate how many of each type would be needed for different sizes of square (you can use R, B and Y instead of colouring), and fill in the table below.

Size of square	Red (corners)	Blue (edges)	Yellow (middle)
2 by 2			
3 by 3			
4 by 4			
5 by 5	4	12	9
6 by 6			
7 by 7			
...	...	...	...
n by n			

If you can, try to fill in the last row, writing an algebraic expression for the number.
If not, try to describe in words the pattern you notice for each colour of tile:
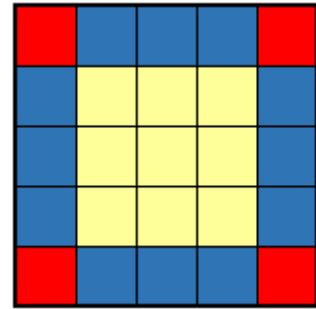
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Tile Patterns Investigation SOLUTIONS

A square floor is to be covered in coloured tiles.
*One colour will be used for the corner tiles, another
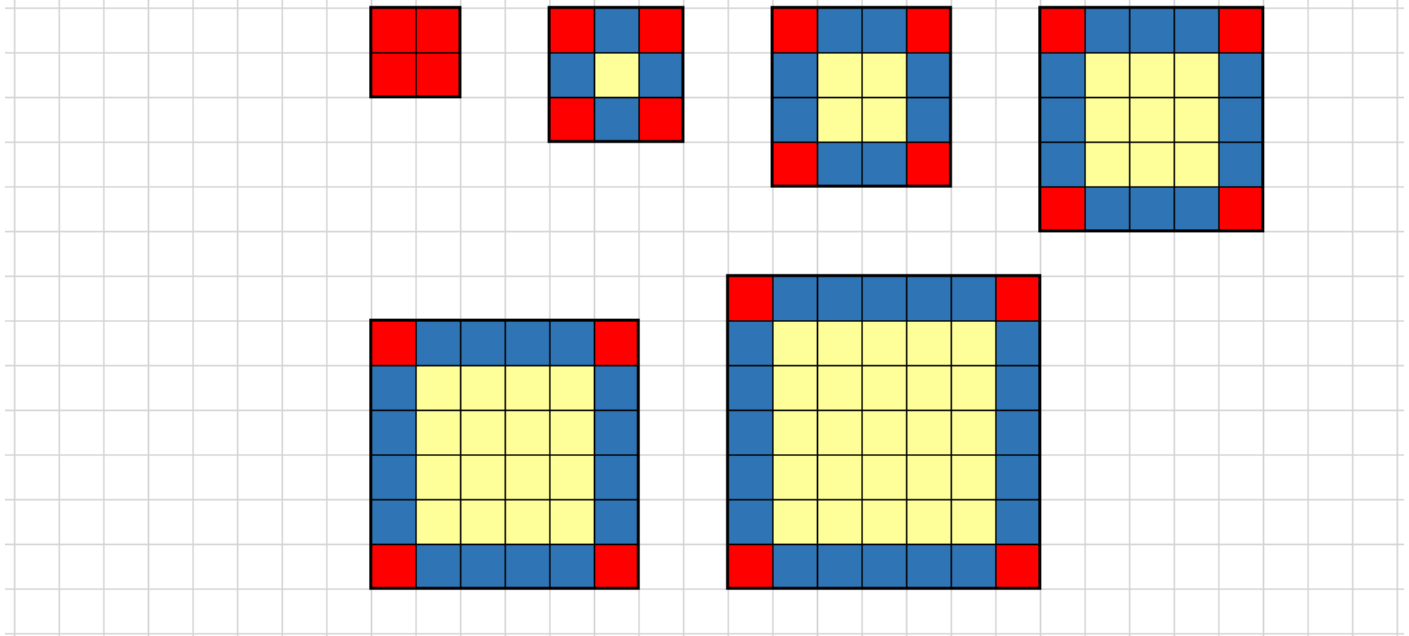for the edge tiles and a third for the middle tiles.*

All corner tiles will be red.
All edge tiles will be blue.
All middle tiles will be yellow.

Use the space below to investigate how many of each type would be needed for different sizes of square (you can use R, B and Y instead of colouring), and fill in the table below.

Size of square	Red (corners)	Blue (edges)	Yellow (middle)
2 by 2	4	0	0
3 by 3	4	4	1
4 by 4	4	8	4
5 by 5	4	12	9
6 by 6	4	16	16
7 by 7			
…	…	…	…
n by n	4	4 (n-2)	(n-2)²

If you can, try to fill in the last row, writing an algebraic expression for the number.
If not, try to describe in words the pattern you notice for each colour of tile:

- The number of red (corner) tiles is always 4.
- The number of blue (edge) tiles goes up in 4s.
- The number of yellow (middle) tiles is the sequence of square numbers. To get from one number to the next, you add 1, then 3, then 5, etc (the odd numbers).