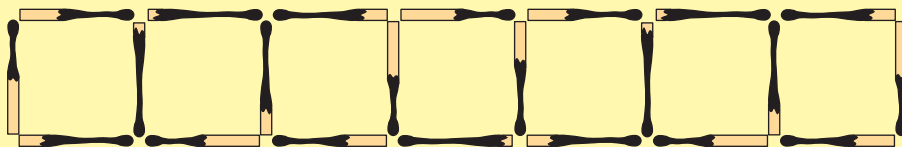


# Seven squares

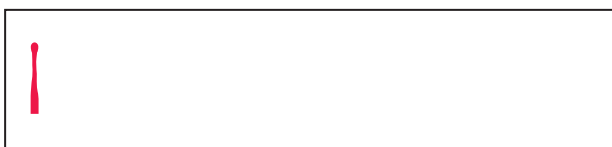
## Generalising from patterns

Some pupils were asked to arrange matches into this pattern:

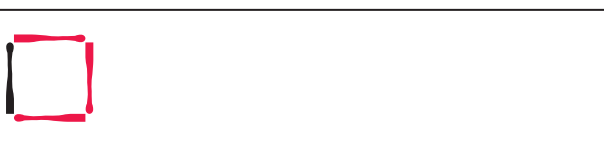


**This is what Tom did**

**He started with ...**



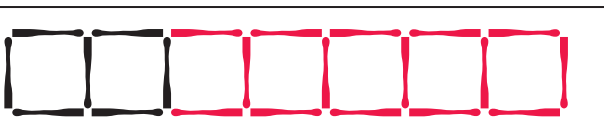
**then added ...**



**and then ...**



**to get ...**



Can you describe what Tom did?

How many 'downs' and how many 'inverted Cs' are there?

How many matches altogether?

Now picture what Tom would do if there were 25 squares.

How many downs and how many inverted Cs would there be?

How many matches altogether?

If there had been 100 squares, how many matches would there be altogether?

Suppose there were a million and one squares – how many matches?

**This is what Alan did**

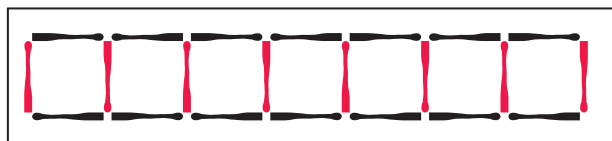
**He started with ...**



**then added ...**



**and then ...**



**to get ...**



Can you describe what Alan did?

How many 'alongs' and how many 'downs' are there?

How many matches altogether?

Now picture what Alan would do if there were 25 squares.

How many alongs and how many downs would there be?

How many matches altogether?

If there had been 100 squares, how many matches would there be altogether?

Suppose there were a million and one squares – how many matches?

**This is what Ruth did**

**She started with ...**



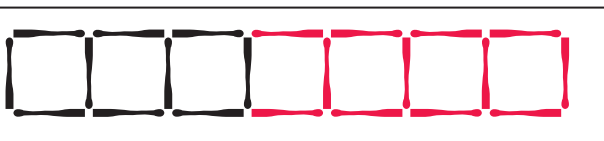
**then added ...**



**and then ...**



**to get ...**



## Follow-up activities

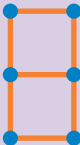
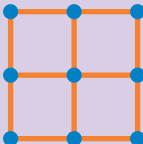
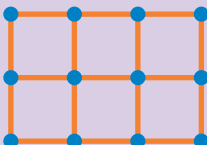
Choose a couple of the sequences below.

Try to picture how to make the next, and the next, and the next, ...


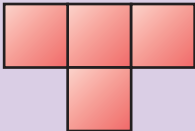
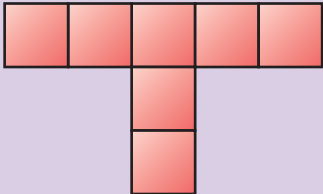
Use this to help you to find the number of squares, or lines, or dots, or perimeter length needed for the largest number in the sequence.

Can you describe your reasoning?

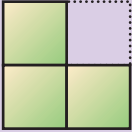
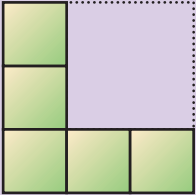
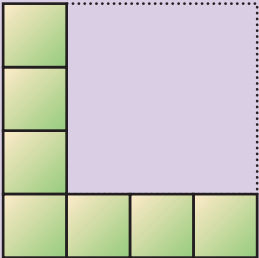
### Growing rectangles

	Width	Perimeter	Number of lines
	1	6	7
	2	8	12
	3		
	⋮		
	100		

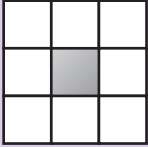
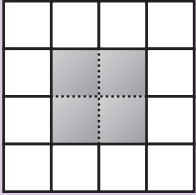
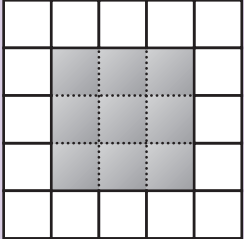
### T-shapes

	Height of T	Number of squares	Number of lines
	1	1	4
	2	4	13
	3		
	⋮		
	100		

## L-shapes

	Side of large square	Number of small squares	Perimeter of L-shape
	2	3	8
	3	5	12
	4		
	⋮		
	100		

## Squares in squares

	Number of grey squares	Number of white squares
	1	8
	4	12
	9	
	⋮	
	100	