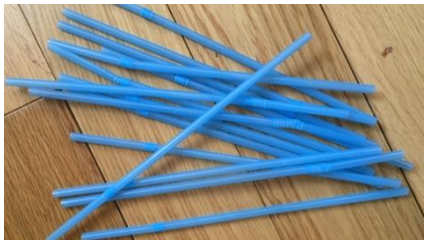
Pattern Week – Sequences Y5/6

This week you will need:

- Something to make patterns and shapes with, such as:

Safe matchsticks

Straws



Cocktail sticks

Strips of paper

- Paper and pencil
- Squared paper (see next page)
- To record and keep your work each day

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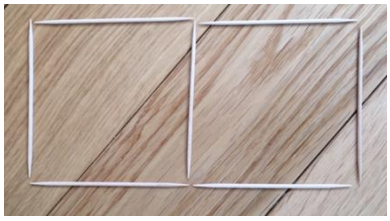
Pattern Week – Sequences Y5/6
Day 1

- Use your sticks to make a square like the one above. This is the start of a sequence of squares.
- Now make another square joined to the first one like this:



- How many sticks have you used altogether?
  Record in a table.

Number of squares	Number of sticks
1	4
2	7

- Now join another square onto the end of your two squares and record the total number of sticks used. Repeat for another square and then another square.
- Look at the numbers in the table. What do you notice?
- Squares have four sides. Why are the numbers **NOT** always multiples of 4?
- Can you say how many sticks would be needed for 10 squares joined together without making them all? Explain to someone else how you know.
- Choose a number of joined squares to imagine and record the number of sticks you would need to make them. Now repeat for another number of squares and another.
- Would the number 40 appear in the sequence in your table if you continued to join squares onto the five you have made? What about 100? How do you know?

Notes for adults working with groups of children

- Encourage the children to work systematically and notice the relationship between the number of squares and the number of sticks; squares have four sides, three sticks are being added each time but the total number of sticks is not always a multiple of four or three. Support the children to explore and explain this.

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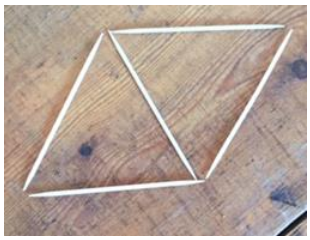
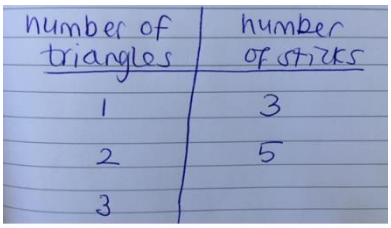
Pattern Week – Sequences Y5/6
Day 2

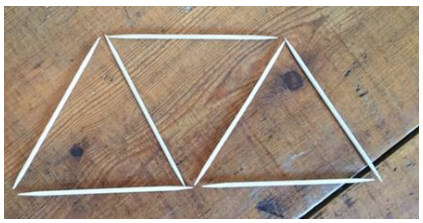


- Use your sticks to make a triangle like the one above. This is the start of a sequence of triangles.
- Now make another triangle joined to the first one like this:
- How many sticks have you used altogether? Record in a table.



number of triangles	number of sticks
1	3
2	5
3	

- Now join another triangle onto the end of your two triangles and record the total number of sticks used.



- Repeat for another triangle and then another triangle.
- Look at the numbers in the table. What do you notice?
- Triangles have three sides. Why are the numbers **NOT** always multiples of 3?
- Can you say how many sticks would be needed for 10 triangles joined together without making them all? Explain to someone else how you know.
- Choose a number of joined triangles to imagine and record the number of sticks you would need to make them. Now repeat for another number of triangles and another.
- Would the number 60 appear in the sequence in your table if you continued to join triangles onto the five you have made? What about 90? How do you know?
- Look at the two numbers sequences from today and yesterday. What's the same? What's different?

Notes for adults working with groups of children

- Encourage the children to work systematically and notice the relationship between the number of triangles and the number of sticks; two sticks are being added each time and triangles have three sides but the total number of sticks is not always a multiple of two or three. Support the children to explore and explain this.

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Pattern Week – Sequences Y5/6
Day 3

1 **2** **3**

- Look at this new sequence. What do you notice? How does it grow? Record the number of squares used for each shape in a table like this:

Shape Number	Number of squares
1	1
2	3
3	5
4	

- Draw the next three shapes in the sequence and record the number of squares used each time.
- What do you notice about how the shape is growing? How many **extra** squares do you need each time? Why?
- Can you say how many squares will be in the 10th shape without making it? Can you find a way to work it out without counting in twos? Explain to someone else how you know.
  Hint: Can you see a connection between the third shape and 2 x 2? Where are the two 2s that have been added to build the shape from the first square; can you mark them? What is the connection between 2 x 3 and the squares in the fourth shape? Does this help you think about the 10th shape? What about the 20th shape? The 100th shape?
- Look at the two numbers sequences from today and yesterday. Both sequences involve adding two. What do you notice? Why does this happen?

Triangles	Sticks		Shape today	Squares
3	7		3	5
4	9		4	7

Notes for adults working with groups of children

- Help the children to see the connection between the number of twos that have been added and the number of squares; it may help them to ring the pair of squares added each time.

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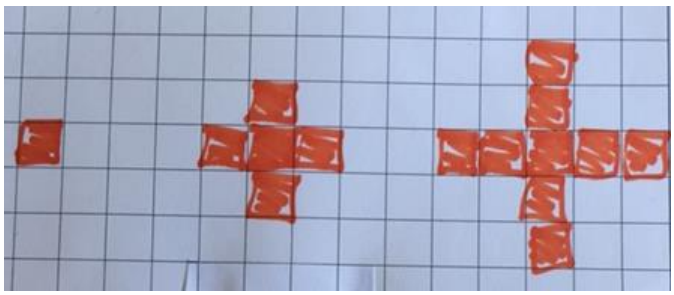
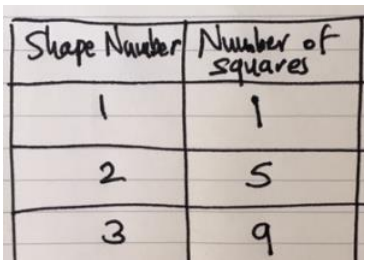
Pattern Week – Sequences Y5/6
Day 4



1 **2** **3**



Shape Number	Number of squares
1	1
2	5
3	9

- Look at this new sequence. What do you notice? How does it grow? Record the number of squares used for each shape in a table like this:
- Draw the next three shapes in the sequence and record the number of squares used each time.
- What do you notice about how the shape is growing? How many **extra** squares do you need each time? Why?
- Can you say how many squares will be in the 10th shape without making it? Can you find a way to work it out without counting in fours? Explain to someone else how you know.
  Hint: Can you see a connection between the third shape and 4 x 2? Where are the two 4s that have been added to build the shape from the first square; can you mark them? What is the connection between 4 x 3 and the squares in the fourth shape? Does this help you think about the 10th shape? What about the 20th shape? The 100th shape?
- Look at the two numbers sequences from today and yesterday. What do you notice?

Day 3 Shape	Squares		Shape today	Squares
3	5		3	9
4	7		4	13

Notes for adults working with groups of children

- Help the children to see the connection between the number of fours that have been added and the number of squares; it may help them to ring the squares added each time.

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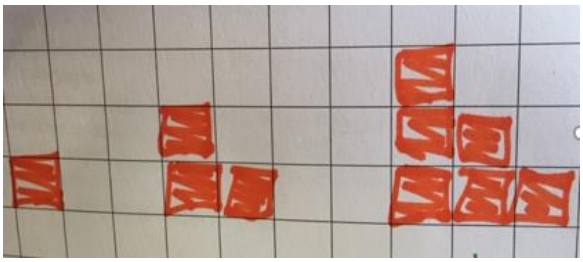
Day 5



1 **2** **3**

- Look at this new sequence. What do you notice? How does it grow? Record the number of squares used for each shape in a table.
- Draw the next three shapes in the sequence and record the number of squares used each time.
- What do you notice about how the shape is growing? How many **extra** squares do you need each time? Why?
- Can you say how many squares will be in the 10th shape without making it? Explain to someone else how you know.

  Hint: Can you see that a new column of squares is added on the left of the previous shape and that this is one bigger each time. So, looking at the columns, shape 2 the columns are 2 + 1 and shape 3 they are 3 + 2 + 1. Does this help you think about the 10th shape? Can you find an easy way to add up the numbers?
- Can you say how many squares will be in the 20th shape?
- Look at the number sequences in the tables from this week. What's the same? What's different?
- Create your own shape sequence to match one of the tables from this week. Take a picture of your shapes and share with someone else; see if they can say which of your tables it matches.

Notes for adults working with groups of children

- Support the children to create their own growing shapes, focussing on the shapes growing by adding the same number of squares each time.

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