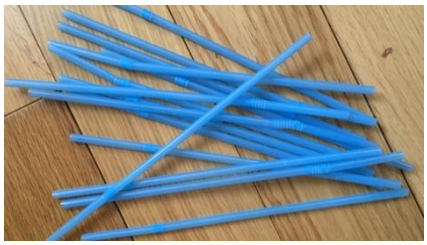
Pattern Week – Sequences Y3/4

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
- To record and keep your work each day

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Pattern Week – Sequences Y3/4

Day 1

- Using your sticks/straws/paper strips make a square like the one above.
- Now make another square.

- How many sticks did you use for one square?
  How many sticks did you use for two squares?
  Record in a table:

number of squares	number of sticks
1	4
2	8

- Now make another square. How many sticks did you use to make three squares? Record in the table.
- Now make another square, and another Square. Record the numbers in the table. What do you notice?
- Can you say how many sticks would be needed for 10 squares without making them all? Can you find a way to work it out without counting in fours?
- What about 20 squares? 100 squares? How many sticks would be needed? Record your thinking as calculations.
- How do you know how many sticks are needed each time?
- How many squares could you make with 48 sticks? 88 sticks?
- How might you record your thinking as calculations?
- Can you make squares with 43 sticks with no sticks left over? With 102 sticks? Explain why.
- Think of some large numbers of sticks that would make squares with no sticks left over and some where there would be sticks left over.

Notes for adults working with groups of children

- Encourage the children to work systematically and notice the relationship between the number of squares, the number of sticks and multiples of four.
- Some children might focus on adding four each time. Encourage them to write multiplications and to use what they know when calculating the number of sticks required for larger numbers. For example, writing 4 x 10 = 40 for ten squares and using this to work out 4 x 20 for twenty squares.
- When working out how many squares could be made from a given number of sticks it might be useful to record the divisions and make links to multiples using a representation such as Numicon.

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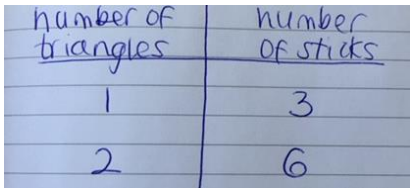
Pattern Week – Sequences Y3/4
Day 2

- Use your sticks to make a triangle like the one above.
- Now make another triangle.

- How many sticks did you use for one triangle?
  How many sticks did you use for two triangles?
  Record in a table:



number of triangles	number of sticks
1	3
2	6

- Make a third triangle. How many sticks did you use to make three triangles? Record in the table.
- Now make another triangle, and another triangle. Record the numbers in the table. What do you notice?
- Can you say how many sticks would be needed for 10 triangles without making them all? Can you find a way to work it out without counting in threes?
- What about 20 triangles? 100 triangles? How many sticks would be needed? Record your thinking as calculations.
- How do you know how many sticks are needed each time?
- How many triangles could you make with 42 sticks? 102 sticks?
- How might you record your thinking as calculations?
- Can you make triangles with 38 sticks with not sticks left over? With 91 sticks? Explain why.
- Think of some large numbers of sticks that would make triangles with no sticks left over and some where there would be sticks left over.
- Look at the numbers in the table from yesterday and compare them with the numbers in today's table. 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, the number of sticks and multiples of three.
- Some children might focus on adding three each time. Encourage them to write multiplications and to use what they know when calculating the number of sticks required for larger numbers. For example, writing 3 x 10 = 30 for ten triangles and using this to work out 3 x 20 for twenty triangles.
- When working out how many triangles could be made from a given number of sticks it might be useful to record the divisions and make links to multiples using a representation such as Numicon.

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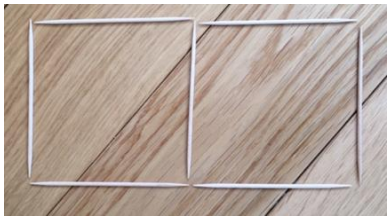
Pattern Week – Sequences Y3/4
Day 3

- Use your sticks to make a square like the one above. This is the start of a new 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 build another square on 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?
- 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. If you are not sure, continue to join squares and record on the table until you notice something happening to the numbers and think you do know how many will be needed for 10 squares.
- Choose your own 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?
- Look at the number sequences in the tables from this week. 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 squares and the number of sticks; three sticks are being added each time but the total number of sticks is not a multiple of three. Support the children to explore and explain this.

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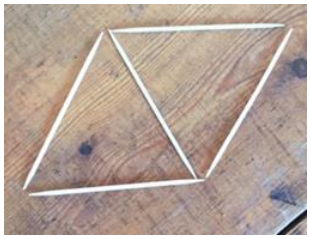
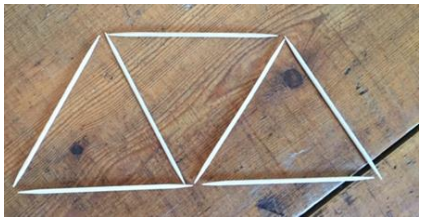
Pattern Week – Sequences Y3/4
Day 4



- Use your sticks to make a triangle like the one above. This is the start of a new 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 build another triangle on 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?
- 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. If you are not sure, continue to join triangles and record on the table until you notice something happening to the numbers and think you do know how many will be needed for 10 triangles.
- Choose your own 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 numbers sequences in the tables from this week. 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 but the total number of sticks is not a multiple of two. Support the children to explore and explain this.

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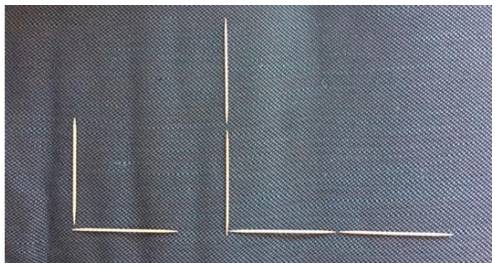
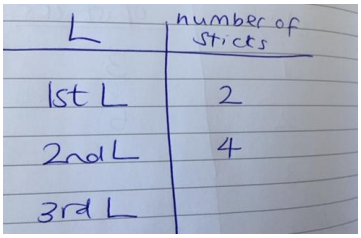
Pattern Week – Sequences Y3/4
Day 5

- Use two sticks to make an L shape like the one above. This is the start of a new sequence of L shapes.
- Now make a larger L shape like this:



- How many sticks did you use for the second L shape?
  Record the number of sticks used for the first shape and the number of sticks used for the second shape in a table:



L	number of sticks
1st L	2
2nd L	4
3rd L	

- Now make a larger L in the same way, and another.
- Keep recording your numbers in the table. What do you notice?
- Can you say how many sticks would be needed for the tenth L shape in the sequence without making it? Explain to someone else how you know. If you are not sure, continue to build L shapes and record on the table until you notice something happening to the numbers and think you do know how many will be needed for the tenth L shape in the sequence.
- Would 31 appear in the sequence in your table if you kept building bigger L shapes? What about 57? Explain how you know.
- Look at the numbers sequences in the tables from this week. What's the same? What's different?
- Create your own growing 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

- Encourage the children to work systematically and notice the relationship between the number of sticks and the term number. Support the children to explore and explain this.
- Support the children to create their own growing shapes, focussing on the shapes growing by adding the same number of sticks each time.

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