PATTERNS, RELATIONSHIPS, FORMULAE AND SEQUENCES

MTH 313-a
Having explored number sequences, I can establish the set of numbers generated by a given rule and determine a rule for a given sequence, expressing it using appropriate notation.

MTH 3 15- a
Having discussed ways to express problems or statements using mathematical language, I can construct, and use appropriate methods to solve, a range of simple equations.

Pupils should be able to:

- Recognise and describe simple relationships eg cost of lollipops, using a table or words
- Create a formula to describe a relationship between two sets of numbers, eg C=8N
- Find and use a formula to describe a linear relationship, defined from either a table of values or a description, Eg Find a rule connecting posts and rails given a picture of the arrangement.
- Use a formula to describe a simple relationship, eg perimeter of a rectangle given the side lengths.
- Substitute correctly into a given formula.
- Continue and describe sequences, including: Constant differences, Fibonacci, and Squares
- Understand the concept of *n-th term.*
- Use difference tables to find a formula for the n-th term

PUPILS SHOULD COMPLETE THE FOLLOWING EXERCISE AND ASSESS THEIR PROGRESS BY TICKING ONE OF THE OPTIONS FOR EACH TOPIC IN THE TABLE BELOW

	DEVELOPING	CONSOLIDATING	SECURE
Number sequences (QUESTIONS 1 – 3)			
Patterns and Formulae (QUESTIONS 4 – 6)			
Using algebra in formulas (QUESTION 7)			

Mymaths lessons: Library/ Algebra/ Sequences/ Sequences
Library/ Algebra/ Sequences/ nth term
Library/ Algebra/ Expressions & Formulae/Rules & Formulae

SELF EVALUATION EXERCISE DATE DUE_____

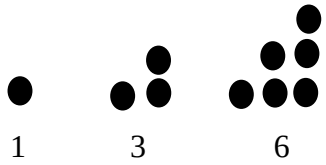
1. Write down two different ways to continue the following sequence.

1, 2, 4, _, _, _, _, _

2. Write down the first 13 square numbers.

3. Explain why 289 is a square number.

4. The sequence showing triangular numbers is shown opposite. Complete the sequence to show the first 6 triangular numbers.



5. The sequence shown below shows matches joined together to make cubes.

1 cube
12 matches

2 cubes
20 matches

3 cubes
28 matches

a) Draw the next three diagrams in the sequence.
b) Copy and complete the following table.

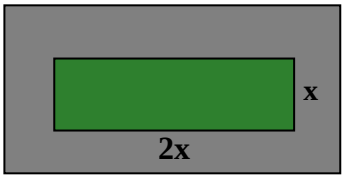
No. of cubes (c)	1	2	3	4	5		31
No. of matches (m)	12	20					

c) Write down the formula connecting m and c.

6. The following sequence 3, 7, 11, 15,..... is shown in the table below. Use the table to write down a formula for the nth term in the sequence.

nth term	1	2	3	4	5		n
Sequence	3	7					

7. The diagram opposite shows a garden with a path around a patch of grass.



a) Find the perimeter of the grass.
b) The perimeter of the grass is 18. Find the value of x.
c) If the length of the path is twice the length of the grass.
Write down three different ways of writing it using x (eg 2 x 2x = 4x)