FINDING FORMULAE

Having explored how real-life situations can be modelled by number patterns, I can establish a number sequence to represent a physical or pictorial pattern, determine a general formula to describe the sequence, then use it to make evaluations and solve related problems.

Pupils should be able to:

- Find a formula for the perimeter of a given shape with sides given algebraically
- Find a formula for the area of a given shape with sides given algebraically
- Find a formula for the volume of a given shape with sides given algebraically
- Understand the difference between "rule for finding the next term" and "formula for the nth term".
- Generate a sequence given a formula for the nth term
- Find a formula for the nth term of a sequence with constant differences.

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
Formulae using algebra (Questions 1-2)			
Finding the nth term (QUESTIONS 3-4)			

mymaths lessons: library/ Algebra/ Sequences / nth term

1. Ollie and Max are getting a new enclosure at the Safari Park.
    The enclosure has a large pool in the middle of it.

6metres   *(x+4)metres*

(x+3)metres
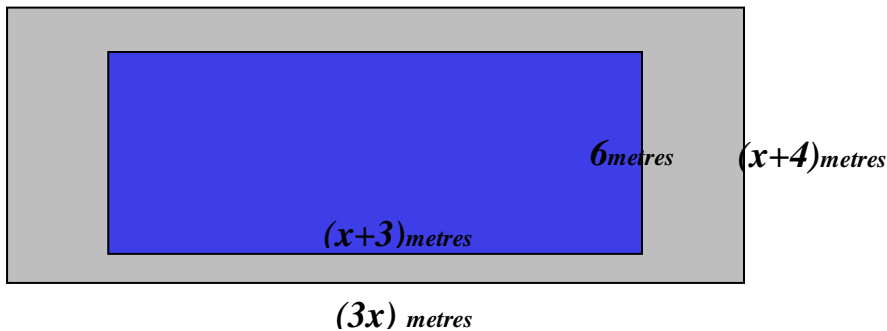
(3x) metres

a) Find an expression (in metres) for the perimeter of the entire enclosure.
b) Find an expression for the area of the pool.
c) The area of the pool is numerically equal to the perimeter of the enclosure. Find the dimensions of both the enclosure and the pool.

2. The container can hold 20 litres.

(a) Write down an expression for the volume of the container.
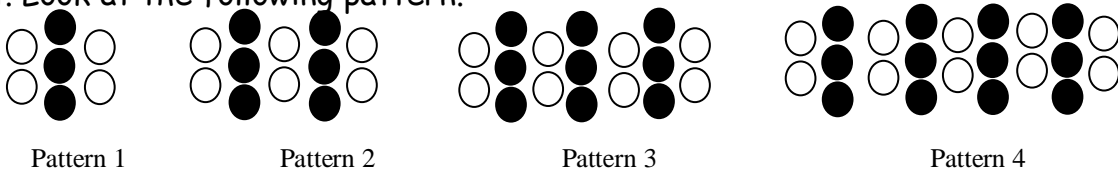(b) Write down an equation for the volume and solve it to find the height and width of the container.

2x cm

x cm

25cm
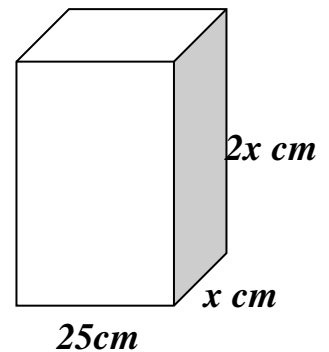
3. Look at the following sequence;

$$12, 18, 24, 30, \ldots$$

a) Write down the rule for this sequence.
b) Write down the next five terms in the sequence.
c) Write down the formula for the nth term in the sequence.

4. Look at the following pattern.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

a) How many white beads would be in pattern 7? How many black beads in pattern 7?
b) Write down a formula for the nth term for the number of white beads.
c) Write down a formula for the nth term for the number of black beads.