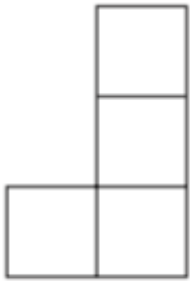
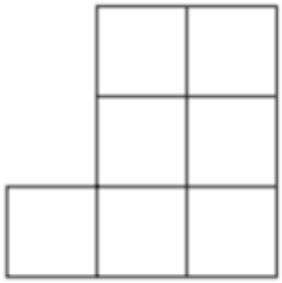
Linear sequences

Question 1

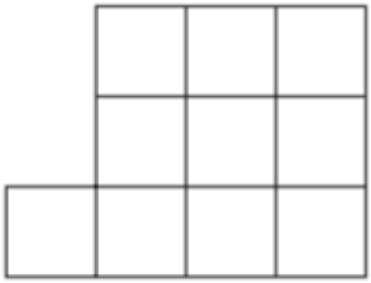
Here is a sequence of patterns made from centimetre squares.



Pattern number 1



Pattern number 2



Pattern number 3

The nth term of this sequence is $3n + 1$.

A pattern in this sequence has 88 centimetre squares.

Work out the Pattern number of this pattern.

Pattern number .....

(2 marks)

Question 2

Here are the first five terms in a number sequence.

2 6 10 14 18

The nth term of the sequence is $4n - 2$.

Is 86 a term in the sequence? You must show your working

[ ] Yes

[ ] No

(1 mark)

Question 3

The nth term of a different sequence is $2^n + 5$

Is 36 a term of this sequence? You must show your working.

(1 mark)

Question 4

Here are the first four terms of a number sequence.

2 7 12 17

Here are the first five terms of another number sequence.

–4 –1 2 5 8

Find two numbers that are in both number sequences.

Input note: write the two numbers in ascending order, separated with a comma i.e. 4, 5

.....

(1 mark)

Question 5

Here are the first five terms of an arithmetic sequence.

7 11 15 19 23

Write down an expression, in terms of n, for the nth term of this sequence.

nth term = **.....**

(2 marks)

Question 6

The first four terms of an arithmetic sequence are

2 9 16 23

Write down an expression, in terms of n, for the nth term.

nth term = ...

(2 marks)

Question 7

Here are the first five terms of an arithmetic sequence.

2 5 8 11 14

Write down an expression, in terms of n, for the $(n + 1)$th term of this sequence.

$(n + 1)$th term = ...

(1 mark)

Question 8

Here are the first five terms of an arithmetic sequence.

2 7 12 17 22

The nth term of a different arithmetic sequence is $4n + 15$

The last term of each sequence is the same number.
There are the same number of terms in each sequence.

Find the number of terms in each sequence.

.....

(6 marks)

Question 9

Here are the first six terms of a Fibonacci sequence.

1 1 2 3 5 8

The rule to continue a Fibonacci sequence is,

the next term in the sequence is the sum of the two previous terms

The first three terms of a different Fibonacci sequence are

a b $a + b$

Find the 6th term of this sequence, in terms of a and b .
Simplify your answer.

.....

Question 10

Here are the first six terms of a Fibonacci sequence.

1 1 2 3 5 8

The rule to continue a Fibonacci sequence is,

the next term in the sequence is the sum of the two previous terms

Find the 9th term of this sequence.

.....

Question 11

Here are the first four terms of a number sequence.

5 9 13 17

The 25th term of the number sequence is 101

Work out the 26th term of the number sequence.

.....

(1 mark)
