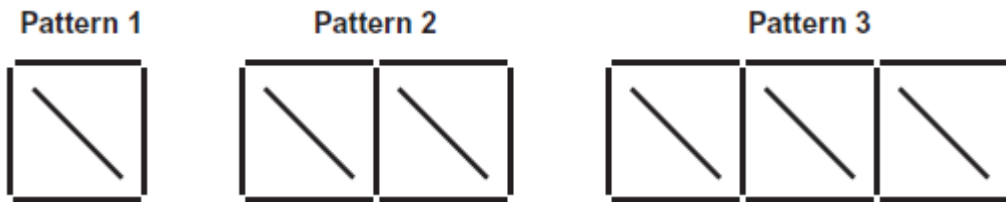


Non-Calculator

Q1.

These patterns are made using sticks.



The number of sticks in each pattern form a sequence.

- (a) Show that the first five patterns use a total of 65 sticks.

(2)

- (b) Work out the n th term of the sequence.

Answer _____

(2)

(Total 4 marks)

Q2.

The square number sequence is

1 4 9 16 25

Prove algebraically that the difference of two consecutive square numbers is an odd number.

(Total 4 marks)

Calculator

Q3.

- (a) The n th term of a sequence is $n^2 - 3$

Work out the first **three** terms of the sequence.

Answer _____, _____, _____

(2)

- (b) The term-to-term rule for another sequence is

Multiply previous term by 2 and add 1

The second term in this sequence is $8x - 5$

Work out an expression for the first term, in terms of x .

Answer _____

(3)

(Total 5 marks)

Q4.

Work out an expression for the n th term of the quadratic sequence

2 17 40 71

Give your answer in the form $an^2 + bn + c$ where a , b and c are constants.

Answer _____

(Total 3 marks)

Q5.

The n th term of the linear sequence

2 7 12 17 ... is $5n - 3$

A new sequence is formed by squaring each term of the linear sequence and adding 1.

Prove algebraically that **all** the terms in the new sequence are multiples of 5 .

(Total 4 marks)

Q6.

Work out an expression for the n th term of the quadratic sequence

11 15 21 29 39 ...

n th term = _____ (Total 4 marks)

Q7.

Circle the quadratic sequence.

2 8 14 22	1 8 27 64
2 4 8 16	1 4 9 16

(Total 1 mark)