Q1.
These patterns are made using sticks.

Pattern 1	Pattern 2	Pattern 3
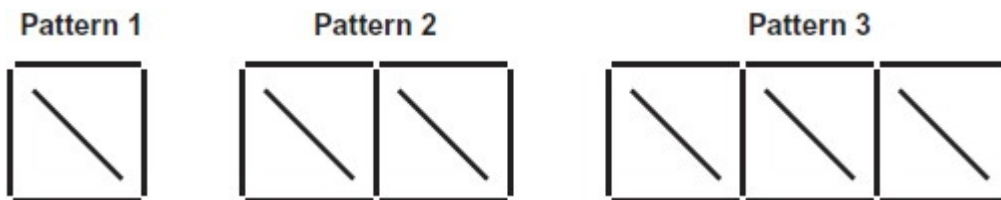
The number of sticks in each pattern form a sequence.

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

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_____

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_____

(2)

(b)   Work out the nth term of the sequence.

_____

_____

_____

Answer _____

(2)
(Total 4 marks)

AQA GCSE Maths - Sequences (H)

Q2.

The square number sequence is

$$1 \quad 4 \quad 9 \quad 16 \quad 25 \quad ......$$

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

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(Total 4 marks)

Q3.

(a)   The nth 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.

_____

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Answer _____

(3)

(Total 5 marks)

Q4.

Work out an expression for the nth term of the quadratic sequence

$$2 \qquad 17 \qquad 40 \qquad 71 \qquad ....$$

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

_____

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Answer _____

(Total 3 marks)

Q5.

The nth term of the linear sequence

$$2 \qquad 7 \qquad 12 \qquad 17 \qquad ... \qquad \text{is } 5n - 3$$

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 .

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(Total 4 marks)

AQA GCSE Maths - Sequences (H)

Q6.

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

<p style="text-align:center">11   15   21   29   39   ...</p>

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*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)