**IGCSE Further Maths Sequences**

**Exercise 1**

1. [Worksheet Q1] A linear sequence starts
Which term is the first to have a negative value?
2. [AQA Worksheet] A sequence has th term . Show that the limiting value of the sequence S, as is 2.5
3. [Set 1 Paper 2 Q3]
(a) The th term of a sequence is .
(a)(i) Show that the th term can be written as .
(a)(ii) Prove that the sum of any two consecutive terms of the sequence is divisible by 8.
(b) The th term of a different sequence is
(b)(i) Explain why 1 is **not** a term in this sequence.
(b)(ii) Work out the limiting value of the sequence as .
4. [Set 2 Paper 1 Q2] Here is a linear sequence:
(a) Work out an expression for the th term.
(b) How many terms are less than 150?
5. [Set 2 Paper 2 Q11]
The th term of sequence X is .
The th term of sequence Y is .
(a) Show that the sequences have the same first term.
(b) The 2nd term of sequence X is equal to the 3rd term of sequence Y. Show that .
(c) Prove that:
6. [Set 4 Paper 2 Q11]
(a) Show that
(b) The th term of a sequence is
 Two consecutive terms in the sequence have a difference of 32. Work out the two terms.
7. [June 2012 Paper 1 Q10] The th term of the linear sequence 2, 7, 12, 17, … is . 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.
8. [Worksheet Q4]
(a) Write down the th term of the linear sequence
(b) Hence, write down the th term of the quadratic sequence.
(c) For the sequence in (b), show that the 30th term is equal to the product of the 2nd and 4th.
9. [AQA Worksheet]

This pattern of rectangles continues. Show that the sequence of numbers formed by the areas of these rectangles has th term.
10. A linear sequence starts
The 5th and 8th terms have values 35 and 59.
(a) Work out and .
(b) Work out the th term of the sequence.
11. [AQA Worksheet] A sequence has nth term .
(a) Show that the difference between the th and th term is
(b) Which are the first two consecutive terms with a difference less than 0.01?
(c) Write down the limiting value of the sequence as .