

Sequences

Question Paper

Course	Edexcel IGCSE Maths
Section	3. Sequences, Functions & Graphs
Topic	Sequences
Difficulty	Hard

Time allowed: 80
Score: /60
Percentage: /100

Question 1a

The n th term of a sequence is $an^2 + bn$.

Write down an expression, in terms of a and b , for the 3rd term.

[1 mark]

Question 1b

The 3rd term of this sequence is 21 and the 6th term is 96.

Find the value of a and the value of b

You must show all your working.

[4 marks]

Question 2a

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 th term of this sequence.

[2 marks]

Question 2b

Is 299 a term of this sequence?

You must give a reason for your answer.

[2 marks]

Question 2c

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

[1 mark]

Question 3a

In all the following sequences, after the first two terms, the rule is to add the previous two terms to find the next term.

Write down the next two terms in this sequence.

1 2 3 5 8 13

[1 mark]

Question 3b

Write down the first two terms of this sequence.

..... 3 11 14

[2 marks]

Question 3c

(i)

Find the value of d and the value of e .

$$2^d = e^{10}$$

[3]

(ii)

Find the value of x , the value of y and the value of z .

$$-33 = x^y = z^{18}$$

[5]

[8 marks]

Question 4

An arithmetic series has first term 1 and common difference 4.

Find the sum of all terms of the series from the 41st term to the 100th term inclusive.

[4 marks]

Question 5

The sum of the first N terms of an arithmetic series, S , is 292

The 2nd term of S is 8.5

The 5th term of S is 13

Find the value of N .

Show clear algebraic working.

$N = \dots\dots\dots$

[5 marks]

Question 6

Mario is going to save \$50 in the year 2021

He is going to continue to save, up to and including the year 2070, by increasing the amount he saves each year by \$ k

Mario will save a total of \$33 125 from 2021 to 2070

Work out the value of k .

$k = \dots\dots\dots$

[3 marks]

Question 7

The first term of an arithmetic series S is -6

The sum of the first 30 terms of S is 2865

Find the 9th term of S .

[4 marks]

Question 8

In an arithmetic series, the 6th term is 39

In the same arithmetic series, the 19th term is 7.8

Work out the sum of the first 25 terms of the arithmetic series.

[4 marks]

Question 9

Work out the sum of the multiples of 3 between 1 and 1000

[4 marks]

Question 10

Here are the first five terms of an arithmetic sequence.

8 15 22 29 36

Work out the sum of all the terms from the 50th term to the 100th term inclusive.

[4 marks]

Question 11

Theo starts with savings of £18
James starts with no savings.

Each week from now,

Theo will save £4.50 and James will save £4

In how many weeks will Theo and James have savings in the ratio 15 : 8 ?

[3 marks]

Question 12

A sequence is defined using this term-to-term rule,

$$u_{n+1} = ku_n + r$$

where k and r are constants.

Given that $u_2 = 41$, $u_3 = 206$ and $u_4 = 1031$, find the value of k and the value of r .

$k = \dots\dots\dots$

$r = \dots\dots\dots$

[5 marks]

Question 13

A sequence is defined by the rule $u_{n+1} = 5u_n - 15$

If $u_3 = 6$, calculate

(i)

u_5

$u_5 = \dots\dots\dots [3]$

(ii)

u_2

$u_2 = \dots\dots\dots [3]$

[3 marks]