

Special Sequences

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Name _____

Total marks: **25**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Here is a list of numbers.

1 6 8 10 16 27 36 45 49

(a) Write down all the numbers from the list that are square numbers.

.....
(1)

(b) Write down all the numbers from the list that are triangular numbers.

.....
(1)

(c) Write down all the numbers from the list that are cube numbers.

.....
(1)

(Total for Question 1 is 3 marks)

2 Here are the first five terms of a Fibonacci sequence.

2 9 16 25

(a) Write down the missing term.

.....
(1)

(b) Work out the 7th term of the sequence.

.....
(1)

(Total for Question 2 is 2 marks)

3 Here are the first four terms of a geometric sequence.

2 6 18 54

Find the 6th term of this sequence.

.....
(2)

(Total for Question 3 is 2 marks)

- 4** Here are the first four terms of a geometric sequence.

32 16 8 4

Find the next term of this sequence.

.....
(1)

(Total for Question 4 is 1 mark)

- 5** The 9th triangle number is 45

Work out the 12th triangle number.

.....
(2)

(Total for Question 5 is 2 marks)

- 6** Here are the first five terms of a sequence.

2 5 10 17 26

Find the next term of this sequence.

.....
(2)

(Total for Question 6 is 2 marks)

7 Here are the first three terms of a sequence.

5 10 20

- (a) Write down a possible 4th term of the sequence.
Give the rule you have used.

.....
(1)

- (b) Write down a **different** possible 4th term of the sequence.
Give the rule you have used.

.....
(1)
(Total for Question 7 is 2 marks)

8 Joe says,
'5 10 20 35 is a geometric sequence.'

Is Joe correct?
You must give a reason for your answer.

.....
.....
(1)
(Total for Question 8 is 1 mark)

9 The n th term of a sequence is $50 - 3n^2$

(a) Work out the 3rd term of this sequence.

.....
(1)

(b) Is 20 a term of this sequence?
Show how you get your answer.

.....
(1)
(Total for Question 9 is 2 marks)

10 A Fibonacci sequence starts 3 k ...
Its 6th term is 49
Find the value of k .

$k =$
(3)
(Total for Question 10 is 3 marks)

11 The first two terms of a Fibonacci sequence are p and q

(a) Show that the sum of the first five terms of this sequence is $5p + 7q$

(2)

(b) The 4th term is 17 and the sum of the first five terms is 67
Work out the value of p and the value of q .

$p = \dots\dots\dots$ $q = \dots\dots\dots$
(3)

(Total for Question 11 is 5 marks)
