Autumn 2017 Paper 1 Q5

1 Here are the first four terms of a number sequence.

2 5 11 23

The rule to continue this sequence is

multiply the previous term by 2 and then add 1

Work out the 5th term of this sequence.

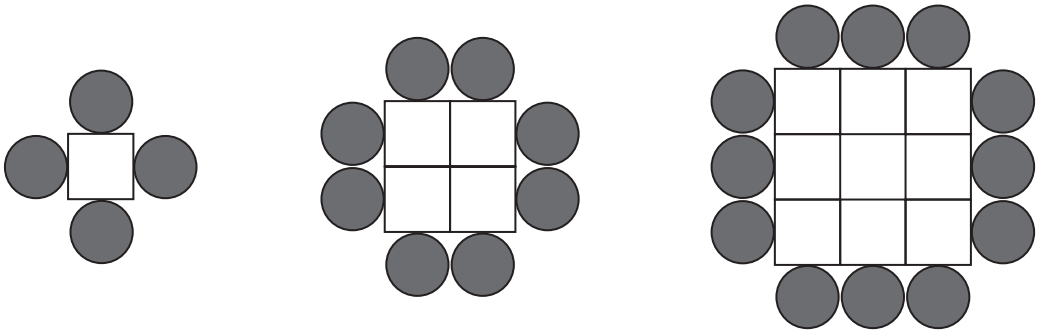
.....

(Total for Question 1 is 1 mark)

Summer 2017 Paper 1 Q11

2 A sequence of patterns is made from circular tiles and square tiles

Here are the first three patterns in the sequence.



pattern number 1 pattern number 2 pattern number 3

(a) How many square tiles are needed to make pattern number 6?

.....

(2)

(b) How many circular tiles are needed to make pattern number 20?

.....

(2)

Derek says,

"When the pattern number is odd, an odd number of square tiles is needed to make the pattern."

(c) Is Derek right?
You must give reasons for your answer.

.....

.....

(2)

(Total for Question 2 is 6 marks)

Autumn 2018 Paper 2 Q9

3 (a) The nth term of a sequence is $3n + 4$

Explain why 21 is not a term of this sequence.

.....

.....

(2)

(b) Here are the first three terms of a different sequence.

1 2 4

Write down two numbers that could be the 4th term and the 5th term of this sequence.
Give the rule you have used to get your numbers.

.....

.....

.....

(2)

(Total for Question 3 is 4 marks)

Autumn 2018 Paper 3 Q26

4 Here are the first four terms of an arithmetic sequence.

5 11 17 23

Write down an expression, in terms of n, for the nth term of the sequence.

.....

(Total for Question 4 is 2 marks)

Summer 2018 Paper 3 Q4

5 Here are the first 4 terms of a sequence.

2 9 16 23

(a) (i) Write down the next term in the sequence.

.....

(1)

(ii) Explain how you got your answer.

.....

(1)

(b) Work out the 10th term of the sequence.

.....

(1)

(Total for Question 5 is 3 marks)

Autumn 2019 Paper 3 Q8

6 Here are the first five terms of a sequence.

1 3 6 10 15

Write down the next two terms of the sequence.

..... , ...

(Total for Question 6 is 2 marks)

Summer 2019 Paper 3 Q13

7 The first term of a sequence of numbers is 24
The term-to-term rule of this sequence is 'add 8'

Josie says,
"No number in this sequence is in the 5 times table."

(a) Give an example to show that Josie is wrong.

.....

(1)

(b) Is 85 a number in this sequence?
Give a reason for your answer.

.....

.....

(1)

(Total for Question 7 is 2 marks)

Summer 2020 Paper 1 Q20

8 The first five terms of an arithmetic sequence are

1 4 7 10 13

Write down an expression, in terms of n, for the nth term of this sequence.

.....

(Total for Question 8 is 2 marks)

Summer 2020 Paper 3 Q12

9 Here are the first five terms of a number sequence.

45 40 35 30 25

(a) (i) Write down the next two terms of this sequence.

....., ...

(1)

A term of this sequence is −5

(ii) Which term?

.....

(1)

The nth term of a different sequence is given by the expression $4n + 3$

(b) Find the 9th term of this sequence.

.....

(1)

(Total for Question 9 is 3 marks)

Autumn 2021 Paper 1 Q13

10 A **number** sequence starts 1 2

Emma says that the next term is 7

(a) Explain why Emma may be correct.

.....

.....

.....

(1)

Here are the first four terms of the sequence of triangle numbers.

1 3 6 10

(b) Find the 8th term of this sequence.

.....

(2)

(Total for Question 10 is 3 marks)

Autumn 2022 Paper 3 Q10

11 Here are the first three terms of a sequence.

20 16 13

(i) Write down two numbers that could be the 4th and 5th terms of this sequence.

..... , ...

(1)

(ii) Write down the rule you used to get your numbers.

.....

.....

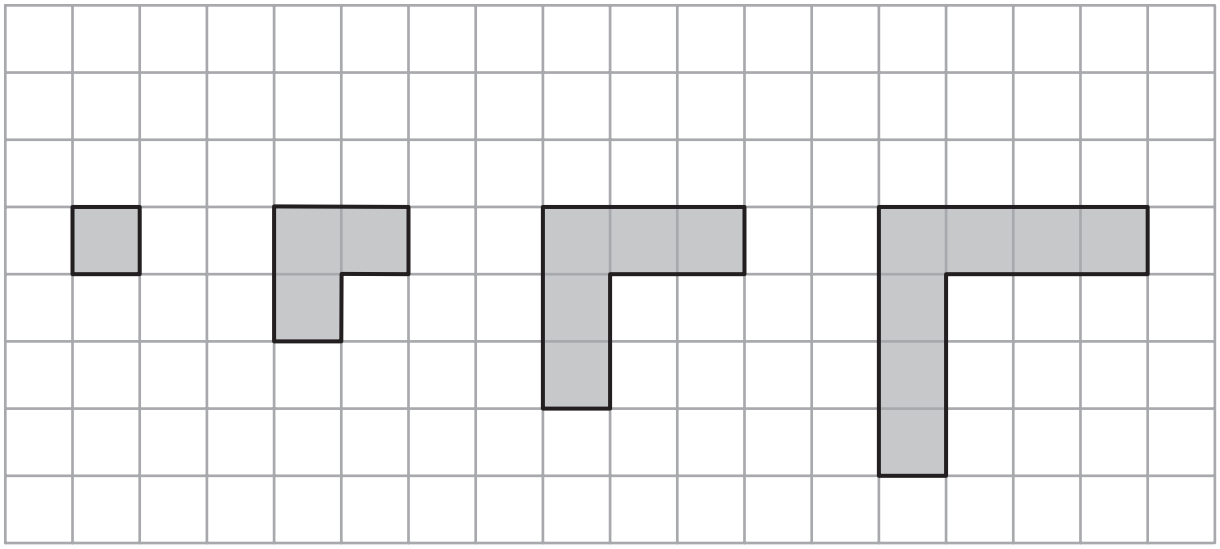
.....

(1)

(Total for Question 11 is 2 marks)

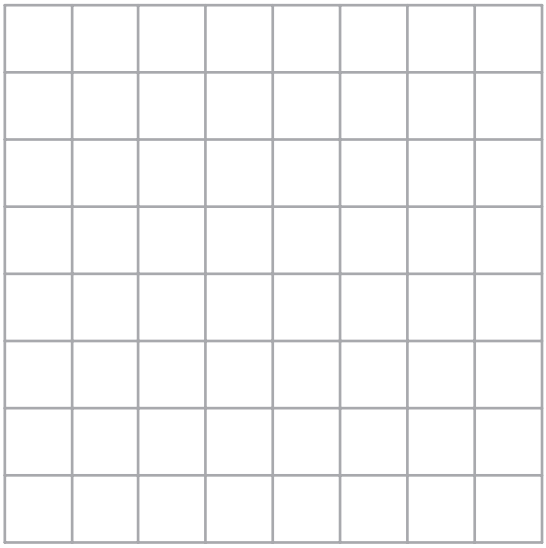
Summer 2022 Paper 1 Q9

12 Here is a sequence of patterns made from grey square tiles.



Pattern number 1 | Pattern number 2 | Pattern number 3 | Pattern number 4

(a) On the grid below, draw Pattern number 5



(1)

(b) Complete the table.

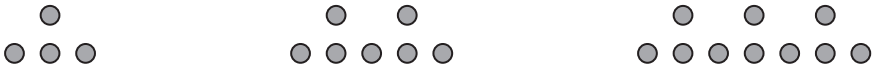
Pattern number	1	2	3	4	5	6
Number of squares	1	3	5	7		

(1)

(Total for Question 12 is 2 marks)

Autumn 2017 Paper 3 Q18

13 Here is a sequence of patterns made with counters.



pattern number 1 pattern number 2 pattern number 3

(a) Find an expression, in terms of n, for the number of counters in pattern number n.

.....

(2)

Bayo has 90 counters.

(b) Can Bayo make a pattern in this sequence using all 90 of his counters?
You must show how you get your answer.

(2)

(Total for Question 13 is 4 marks)

Summer 2017 Paper 2 Q25

14 Here are the first six terms of an arithmetic sequence.

3 8 13 18 23 28

(a) Find an expression, in terms of n, for the nth term of this sequence.

.....

(2)

The nth term of a different sequence is $3n^2$
Nathan says that the 4th term of this sequence is 144

(b) Is Nathan right?
Show how you get your answer.

(1)

(Total for Question 14 is 3 marks)

Autumn 2019 Paper 2 Q26

15 The nth term of a sequence is $2n^2 - 1$

The nth term of a different sequence is $40 - n^2$

Show that there is only one number that is in both of these sequences.

(Total for Question 15 is 3 marks)

Summer 2019 Paper 2 Q28

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

3 3 6 9 15

(a) Write down the next two terms of the sequence.

..... , ...

(1)

The first three terms of a different Fibonacci sequence are

a a $2a$

(b) Find the 6th term of this sequence.

.....

(2)

(Total for Question 16 is 3 marks)

Autumn 2021 Paper 3 Q25

17 The first four terms of a Fibonacci sequence are

$$a \qquad 2a \qquad 3a \qquad 5a$$

The sum of the first five terms of this sequence is 228

Work out the value of a.

.....

(Total for Question 17 is 3 marks)

Autumn 2022 Paper 2 Q20

18 Here are the first five terms of an arithmetic sequence.

7 13 19 25 31

(a) Find an expression, in terms of n, for the nth term of this sequence.

.....

(2)

The nth term of a different sequence is $8 - 6n$

(b) Is -58 a term of this sequence?
You must show how you get your answer.

(2)

(Total for Question 18 is 4 marks)

Summer 2022 Paper 3 Q8

19 Here are the first five terms of a number sequence.

3 8 13 18 23

(a) Write down the next two terms of this sequence.

....

(1)

Jim says that 50 is a term in this sequence.
Jim is wrong.

(b) Explain why.

.....

.....

.....

(1)

(Total for Question 19 is 2 marks)