



Aberdare Community School
Mathematics Department

WJEC GCSE
Foundation – Non Calculator
Algebra

Sequences - later questions

Name:

Set:

Date:

Teacher:

16. (a) The n th term of a sequence is $n^2 + 5$. List the first three terms of the sequence.

.....

.....

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.....

[2]

15.

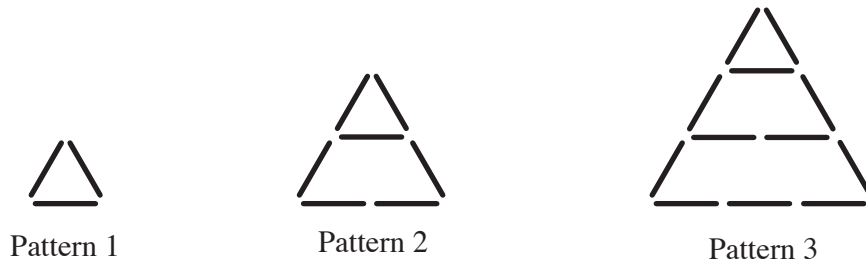
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(c) Write down the values of the first three terms of the sequence whose n th term is $n^2 - 3$.

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[2]

7. The following patterns have been made using rods.



(a) Draw Pattern 4 in the space below.

[1]

(b) Complete the following table.

Pattern number	1	2	3	4	5
Number of rods	3	7	12		

[2]

(c) Without drawing it, write down the number of rods in Pattern 6.

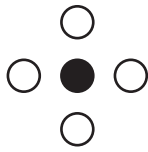
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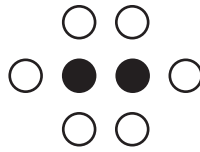
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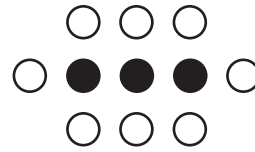
6. The following patterns have been made using black and white discs.



Pattern 1



Pattern 2



Pattern 3

(a) Draw Pattern 4 in the space below.

[1]

(b) Complete the following table.

Pattern	1	2	3	4	5
Number of black discs	1	2	3	4	5
Number of white discs	4	6	8		

[2]

(c) Without drawing any more patterns, answer the following two questions.

(i) Write down the number of black discs in Pattern 50.

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(ii) There are 100 white discs in Pattern 49.
How many white discs are there in Pattern 50?

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[2]

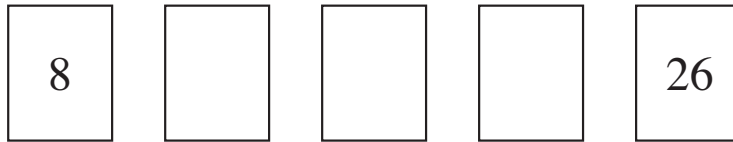
19. Write down the n th term for the sequence 5, 14, 23, 32, 41,

.....
.....

[2]

16. (a) A sequence starts with 8.
Equal amounts are added each time to get the next term.
Write down the three missing terms of the sequence.

[3]



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- (b) Write down the n th term of the sequence 8, 13, 18, 23, 28,

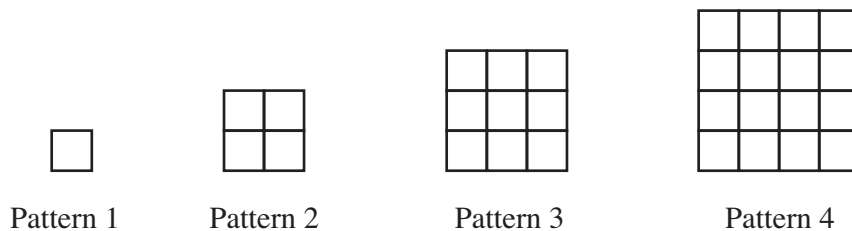
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[2]

- (c) The diagrams show tile patterns.



Find an expression for the number of tiles in Pattern n .

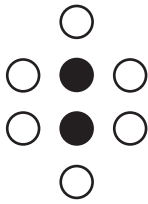
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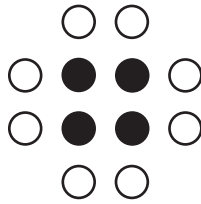
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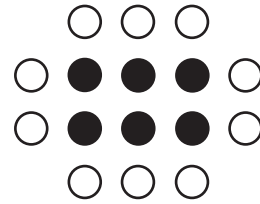
7. The following patterns have been made using black and white discs.



Pattern 1



Pattern 2



Pattern 3

(a) Draw Pattern 4 in the space below.

[1]

(b) Complete the following table.

Pattern number	1	2	3	4	5
Number of black discs	2	4	6		
Number of white discs	6	8	10		

[2]

(c) (i) Without drawing it, write down the number of the pattern that has 16 black discs.

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(ii) Write down the number of white discs in the pattern that has 16 black discs.

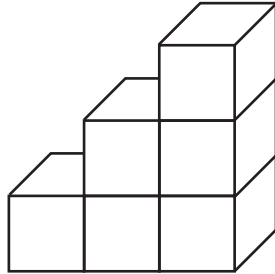
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[4]

15. This stairway is made with 6 cubes. It has 3 steps.



How many cubes would be needed to make a similar stairway with 9 steps?

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[3]

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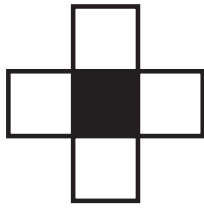
(b) Write down the n th term of the sequence 3, 11, 19, 27, 35, ...

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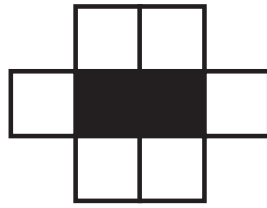
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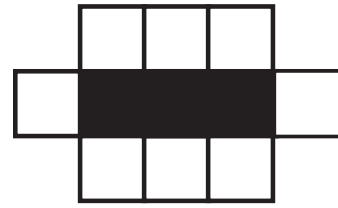
14.



Pattern 1



Pattern 2



Pattern 3

Complete the following table.

Pattern number	Number of black squares	Number of white squares
1	1	4
2	2	6
3	3	8

15		
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100		
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n		
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[5]

(d) (i) Here are patterns made from matchsticks.



Pattern number 1



Pattern number 2



Pattern number 3

In the space below, draw Pattern number 4.

[1]

(ii) Complete the table for the number of matchsticks in each pattern.

Pattern number	1	2	3	4
Number of matchsticks				

[2]

(iii) How many matchsticks would be needed to make Pattern number 8?

.....

[1]

19.

(b) Find the n th term of the sequence

5, 11, 17, 23,

.....

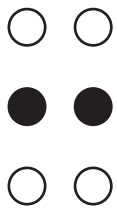
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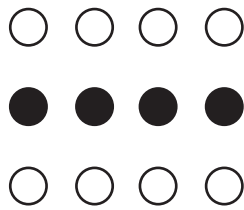
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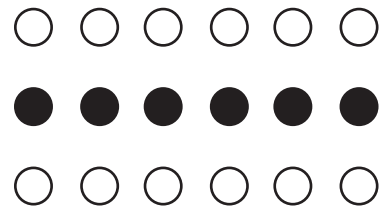
6. The following patterns have been made using black discs and white discs.



Pattern 1



Pattern 2



Pattern 3

(a) Draw Pattern 4 in the space below.

[1]

(b) Complete the following table.

Pattern number	1	2	3	4	5
Number of black discs	2	4	6		
Number of white discs	4	8	12		

[2]

(c) Without drawing any more patterns, answer the following two questions.

(i) Write down the number of black discs in Pattern 45.

.....

(ii) In a certain pattern there are 200 white discs. How many black discs are there in that pattern?

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[2]

17. (a) Write down the n th term of the sequence 6, 10, 14, 18, 22, ...

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[2]

16.

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(c) Write down the n th term of the sequence 3, 7, 11, 15, 19,

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[2]



14. Write down the n th term of the following sequences.

(a) 6, 13, 20, 27,

.....
..... [2]

(b) 26, 20, 14, 8,

.....
..... [2]

15.

15. Find the n th term of the following sequences.

(a) 3, 13, 23, 33, 43,

.....
.....

[2]

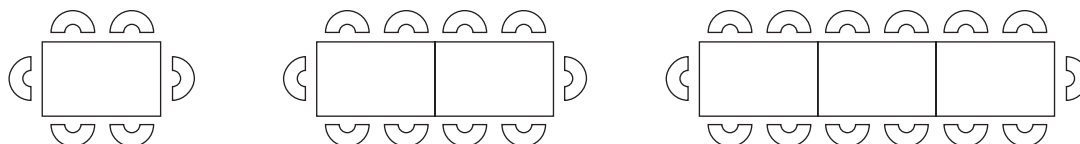
(b) 50, 40, 30, 20, 10,

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.....
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[2]

END OF PAPER

8. Seating arrangements around 1, 2 and 3 tables are shown below. Tables must be placed only side by side in one row.



- (a) In the space below, draw a seating arrangement for a row of 4 tables. [1]

- (b) Complete the following table for the seating arrangements. [2]

Number of tables	1	2	3	4	5
Number of seats	6	10			

- (c) Complete the following formula which connects the number of seats and the number of tables. [2]

Number of seats =

- (d) How many seats are there around a row of 7 tables? [1]

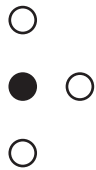
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- (e) How many tables are needed for 82 seats? [2]

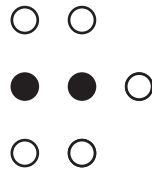
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19. Patterns made with black and white circles are shown below.

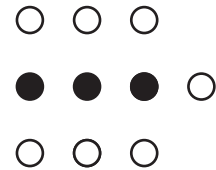
Pattern 1



Pattern 2



Pattern 3



Complete the following statements, in terms of n .

[3]

'There will be black circles in Pattern n .'

'There will be white circles in Pattern n .'

.....

.....



14. (a) Write down an expression for the n th term of the following sequence.

[2]

Examiner
only

5, 12, 19, 26, 33,

.....

.....

n th term