



Aberdare Community School
Mathematics Department

WJEC GCSE
Higher – Calculator
Algebra

Sequences

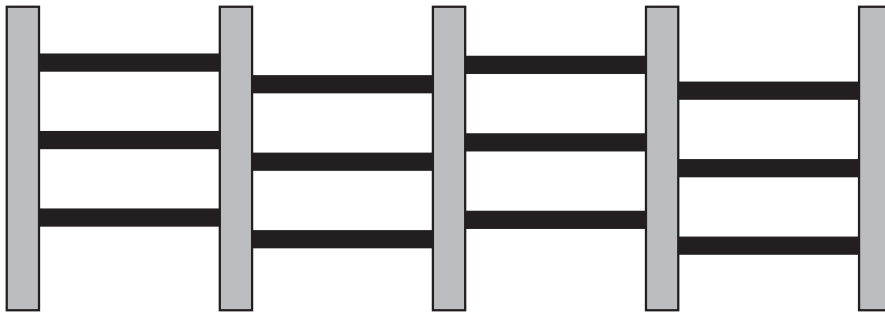
Name:

Set:

Date:

Teacher:

2. Fences are made using vertical posts and 3 horizontal rails between each pair of vertical posts. The fence shown below has 5 vertical posts with 3 horizontal rails between each pair of vertical posts.

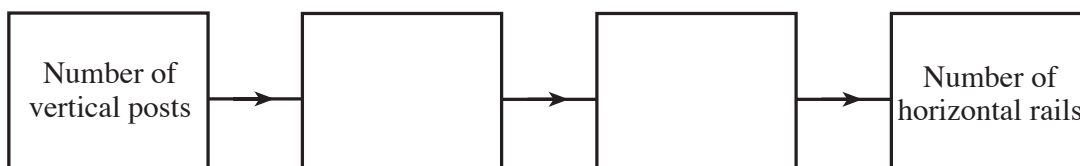


- (a) Complete the following table which shows the relationship between the number of vertical posts and horizontal rails.

Number of vertical posts	Number of horizontal rails
2	3
3	6
4	9
5	12
6	
10	

[1]

- (b) Use your table to enter the two missing stages in the number machine.



[2]

4.

(d) Write down the first three terms of a sequence where the n th term is $n^2 - 3$.

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[2]

9. (a) Write down the n th term of the sequence 5, 9, 13, 17, 21,

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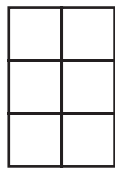
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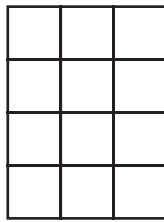
(b) The diagrams show tile patterns.



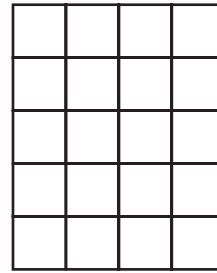
Pattern 1



Pattern 2



Pattern 3



Pattern 4

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

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[2]

2. (a) The n th term of a sequence is $n^2 + 10$. Write down the first three terms of this sequence.

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[2]

2.

- (b) A sequence of six numbers starts with 7 and ends with 72.
Equal amounts are added each time to get the next number.
Write in the missing numbers.

7					72
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[3]

5. Triangle patterns are made using sticks.

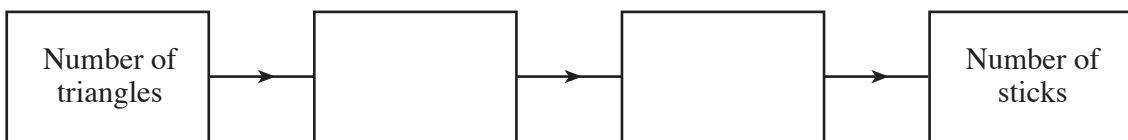


(a) Complete the following table which shows the relationship between the number of triangles in a pattern and the number of sticks.

Number of triangles	Number of sticks
1	3
2	5
3	7
4	9
5
⋮	⋮
10

[1]

(b) Use your table to enter the two missing stages in the number machine which is used to calculate the number of sticks for a given number of triangles.



[2]

5. (a) Write down the first three terms of the sequence with an n th term of $n^2 + 10$.

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[2]

5. (a) Write down the n th term of the sequence 9, 17, 25, 33, 41,

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[2]

- (b) The diagrams show tile patterns.
Each pattern has some shaded tiles and some white tiles.



Pattern 1



Pattern 2



Pattern 3



Pattern 4

- (i) Find an expression for the number of shaded tiles in Pattern n .

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- (ii) Find an expression for the number of white tiles in Pattern n .

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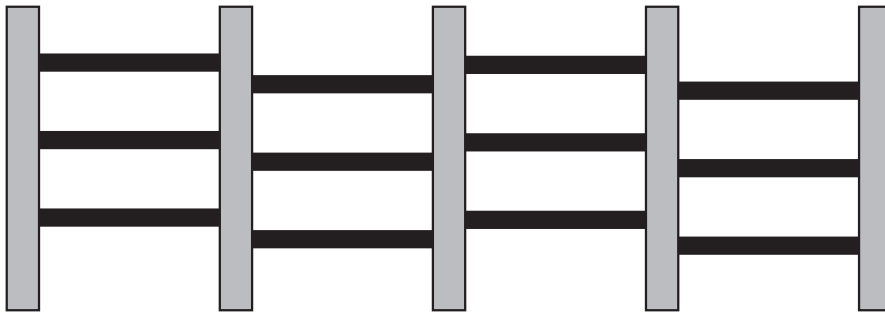
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[3]

2. Fences are made using vertical posts with 3 horizontal rails between each pair of vertical posts. The fence shown below has 5 vertical posts with 3 horizontal rails between each pair of vertical posts.

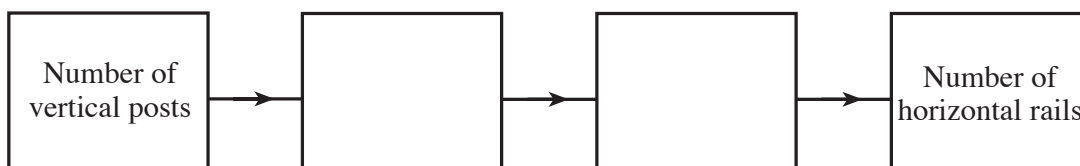


- (a) Complete the following table which shows the relationship between the number of vertical posts and horizontal rails.

Number of vertical posts	Number of horizontal rails
2	3
3	6
4	9
5	12
6	
10	

[1]

- (b) Use your table to enter the two missing stages in the number machine.



[2]

4.

(d) Write down the first three terms of a sequence where the n th term is $n^2 - 3$.

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[2]

12. Here is a sequence of numbers.

267 259 251 243

(a) What is the first number in the sequence that is less than zero?

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[3]

(b) Find the n th term of the sequence.

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[2]

4.

- (b) The n th term of a sequence is $n^2 + 3$.
Write down the first three terms of the sequence.

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[2]

- (c) Write down the n th term of the sequence 8, 15, 22, 29, 36, ...

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[2]

7.

(c) Write down the n th term of the sequence 1, 4, 9, 16, 25, ...

[1]

5. (a) Find the n th term of the sequence 7, 10, 13, 16, 19,

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[2]

- (b) Find the n th term of the sequence 2, 5, 10, 17, 26,

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[2]

- (c) In a sequence of four numbers, the difference between each number is 7.
The sum of the four numbers is 6.
What are the numbers in the sequence?

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[4]

2.

(b) Find the n th term of the sequence 1, 7, 13, 19, 25, ...

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[2]

(c) The n th term of a sequence is $n^2 + 6$.
Find the value of the 15th term of the sequence.

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[2]



4. (a) Find the n th term of the sequence 4, 10, 16, 22, 28, ...

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[2]

- (b) The n th term of a sequence is $n^2 + 7$. Find the value of the 20th term of the sequence.

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[2]

2. (a) The n th term of a sequence is $n^2 - 6$.
Write down the first three terms of the sequence.

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[2]

10.

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(b) Write down the n th term for each of the following sequences.

(i) 4, 9, 14, 19, 24, ...

[2]

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(ii) 2, 5, 10, 17, 26, 37, 50, ...

[1]

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6. (a) The n th term of a sequence is $3n^2 - 25$.
Evaluate the 40th term of the sequence.

[2]

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- (b) Write down the n th term of the following sequences.

[2]

- (i) 7, 19, 31, 43, 55, 67,

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- (ii) 48, 46, 44, 42, 40, ...

[2]

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