



## GCSE Foundation

14

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43 minutes



42 marks

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*Sequences*

**Q1.** Here is a sequence.

8      14      20      26      32      .....      .....

(a) Write down the rule for continuing the sequence.

.....

Answer .....

(1)

(b) Write down the next **two** numbers in the sequence.

Answer ..... and .....

(1)

(c) The 50<sup>th</sup> term in the sequence is 302.

What is the 48<sup>th</sup> term in the sequence?

.....

.....

Answer .....

(2)

(Total 4 marks)

**Q2.** (a) Here are the first two terms of a sequence.

5    4    .....    .....    .....

The rule for finding the next term in the sequence is

Multiply the previous term by 2 and subtract 6
--

Work out the first negative term of the sequence.

.....

.....

Answer .....

(2)

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

1      4      7      .....      .....      .....

Which of the following is the  $n$ th term for this sequence?  
Circle the correct answer.

.....  
.....  
.....

$n + 3$        $3n + 1$        $3n - 2$        $3n + 2$

(1)  
(Total 3 marks)

**Q3.** (a) Here are the first two terms of a sequence.

2      8      .....      .....

The term-to-term rule of the sequence is

Multiply by 3 and add 2

Work out the next **two** terms of the sequence.

.....  
.....

Answer..... and .....

(2)

(b) The term-to-term rule of the sequence is

Multiply by 2 and add 4

The third term of this sequence is 6.

.....      .....      6      .....

Work out the first term of this sequence.

.....  
.....  
.....  
.....

Answer .....

(4)  
(Total 6 marks)

- Q4.** (a) The numbers in this sequence decrease by the same amount each time.

74      .....      58      50      42      .....

What are the **two** missing numbers?

.....

Answer ..... and .....

(2)

- (b) The numbers in this different sequence decrease by the same amount each time.

26      .....      .....      .....      6

What are the **three** missing numbers?

.....

.....

.....

.....

Answer ..... , ..... , .....

(2)

(Total 4 marks)

- Q5.** (a) The rule for the next term of a sequence is

Multiply the previous term by three and subtract one.

The first two terms of the sequence are 2 and 5.

Write down the next **two** terms.

.....

.....

Answer      2      5      .....      .....

(2)

- (b) The  $n$ th term of a different sequence is  $5n$ .

The first term is 5

Write down the next **three** terms.

Answer      5      .....      .....      .....

(1)

(c) Work out the  $n$ th term of this sequence.

7      10      13      16      19

.....

Answer .....

(2)  
(Total 5 marks)

**Q6.** (a) Here is a sequence of numbers.

8      15      22      29      36

Write down the next number in the sequence.

.....

Answer .....

(1)

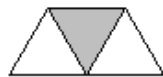
(b) Here is a different sequence of numbers.

1      2      4      8      16

Circle the square numbers in this sequence.

(2)  
(Total 3 marks)

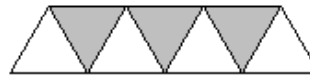
**Q7.** Here is a sequence of triangle patterns.



Pattern 1



Pattern 2



Pattern 3

Complete the table.

	Pattern 1	Pattern 2	Pattern 3	Pattern 4
Number of <b>shaded</b> triangles	1	2	3	
Total number of triangles	3	5		

(Total 2 marks)

**Q8.** Billy and Mina are investigating sequences that begin with

1, 2, 4, .....

(a) Billy says the fourth term is 8

What rule could Billy be using?

.....  
 .....

Answer .....

(1)

(b) Mina says the fourth term is 7

What rule could Mina be using?

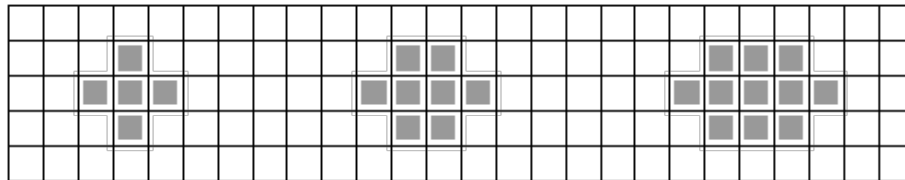
.....  
 .....

Answer .....

(1)

(Total 2 marks)

**Q9.** Square tiles are used to make patterns on a grid.



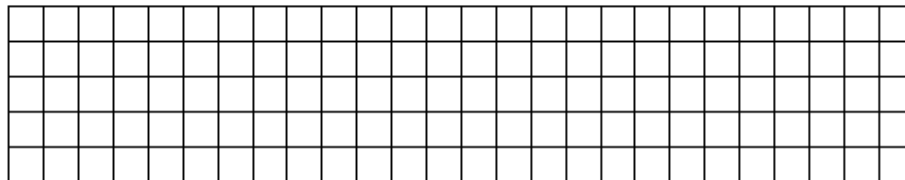
Pattern 1

Pattern 2

Pattern 3

(a) The pattern continues in the same way.

Draw Pattern 4



(1)

(b) (i) Complete this table.

Pattern Number	1	2	3	4	5
Number of tiles	5	8			

(1)

(ii) How many tiles are in Pattern 9?

.....  
.....

Answer .....

(1)

(c) There are 302 tiles in Pattern 100.

How many tiles are in Pattern 99?

.....

Answer .....

(1)

(Total 4 marks)

**Q10.** Here is a sequence of numbers

4     7     10     13

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

.....

Answer .....

(1)

(b) Write down the rule for continuing the sequence.

.....

Answer .....

(1)

(Total 2 marks)

**Q11.** This question is about sequences that start 1, 4 ...

(a) Here are the first three terms of a sequence

1      4      16      ...

The rule for continuing this sequence is

Multiply by 4

What is the next term?

.....

Answer .....

(1)

(b) Another sequence uses a pattern of dots.

Here are the first three patterns.

•

Pattern 1

•  
• •  
•

Pattern 2

•  
•  
• • •  
•  
•

Pattern 3

(i) Draw Pattern 4

(1)

(ii) How many dots are in Pattern 5?

.....

Answer .....

(1)



(c) Here are the first five terms of a different sequence

1      4      8      13      19    ...

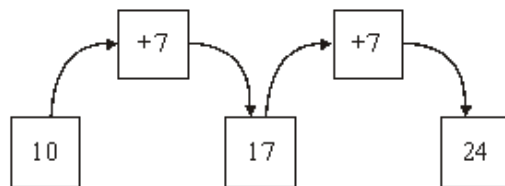
What is the next term?

.....  
.....

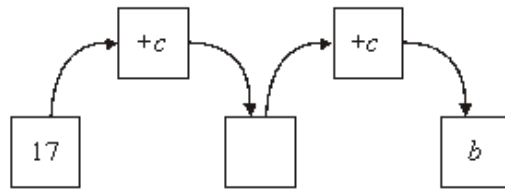
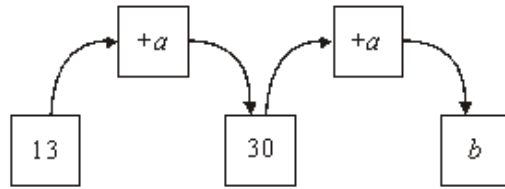
Answer .....

(1)  
(Total 4 marks)

**Q12.** In all of the following diagrams numbers are increased by two equal steps.  
For example:



Find  $a$ ,  $b$  and  $c$ .



.....

.....

.....

.....

.....

.....

Answer  $a =$  .....,  $b =$  .....,  $c =$  .....

**(Total 3 marks)**

