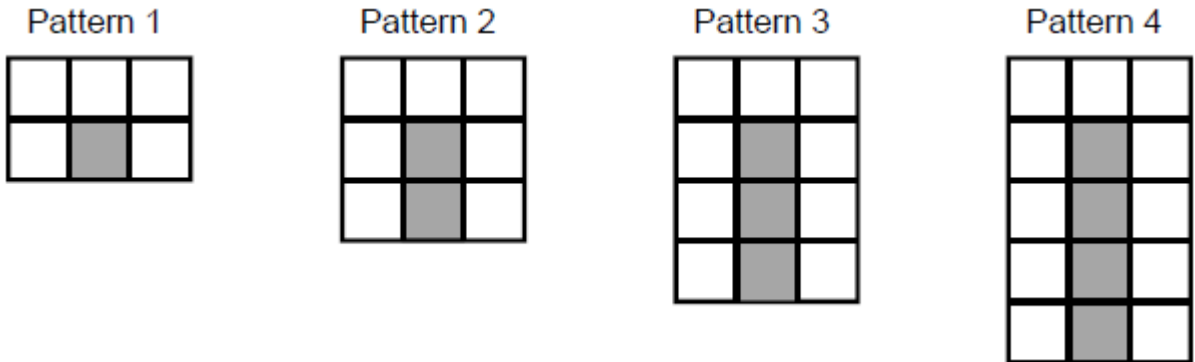


**Q1.**

A sequence of patterns uses grey squares and white squares.

Here are the first four patterns.



(a) Work out the **total** number of squares in Pattern 100

.....

.....

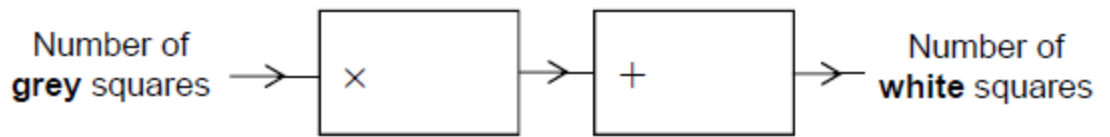
.....

.....

Answer .....

**(3)**

(b) Complete this number machine for the sequence of patterns.



(1)  
(Total 4 marks)

**Q2.**

- (a) Here is a linear sequence.

21      23      25      27      ....

Circle the expression for the  $n$ th term of the sequence.

$23 - 2n$        $19n + 2$        $21 - 2n$        $2n + 19$

(1)

- (b) A different sequence starts

$a$        $2a - 3$       ....

The term-to-term rule for this sequence is

multiply by 2 and subtract 3

The fourth term of this sequence is 35

Work out the value of  $a$ .

.....

.....

.....

.....

.....

.....

.....

.....

Answer .....

(3)  
(Total 4 marks)

**Q3.**

(a) Here is a sequence.

5            8            11            14            17            .....

Write down the next number in the sequence.

Write down the rule for continuing the sequence.

.....

Next number .....

Rule .....

(2)

(b) Here is a different sequence.

Work out the  $n$ th term of the sequence.

7            13            19            25            31

.....

.....

Answer .....

(2)  
(Total 4 marks)

**Q4.**

Work out the  $n$ th term of the sequence.

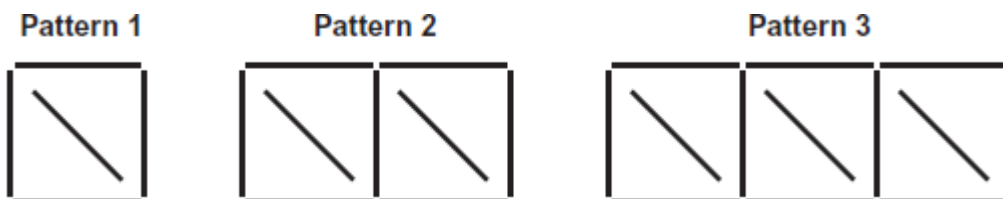
7      13      19      25      31      .....

.....  
 .....

Answer .....

**(Total 2 marks)**

**Q5.** This sequence of patterns is made using sticks.



(a) Complete the table for Pattern 4 and Pattern 5

<b>Pattern</b>	1	2	3	4	5
<b>Number of sticks</b>	5	9	13		

**(1)**

(b) Work out the  $n$ th term of the sequence      5      9      13      ....

.....  
 .....

Answer .....

**(2)**

(c) Which pattern is made using 53 sticks?

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

Answer .....

(2)  
 (Total 5 marks)

**Q6.** Work out the  $n$ th term of this sequence

6      10      14      18      22      ...

Answer .....

(Total 2 marks)

**Q7.**

Here are the first four terms of a sequence.

$4a$        $9a$        $14a$        $19a$

The  $n$ th term of the sequence is  $\frac{10n - 2}{3}$

Work out the value of  $a$

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

$a =$  .....

(Total 2 marks)

**Q8.**

Work out the next term for the following sequences.

(a) 5            9.5            14            18.5            .....

Answer .....

(1)

(b) 22            18            14            10            .....

Answer .....

(1)

(c)  $\frac{3}{8}$              $\frac{5}{11}$              $\frac{7}{14}$              $\frac{9}{17}$              $\frac{11}{20}$             .....

Answer .....

(2)

(Total 4 marks)

**Q9.(a)** The  $n$ th term of a sequence is  $\frac{n^2}{2}$

Which term in the sequence is the first to have a value greater than 50?

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

Answer .....

(2)

(b) Here is a different sequence.

7    10    13    16    ...

Work out the  $n$ th term for this sequence.

.....  
 .....

Answer .....

(2)  
 (Total 4 marks)

**Q10.(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)