Sequences – 2022 O Level Math D

1. June/2022/Paper_12/No.9

   Shani makes a sequence of patterns using counters.

   Pattern 1   Pattern 2   Pattern 3

   (a) Complete the table.

Pattern number	1	2	3	4	5
Number of counters	5	8	11		

   [1]

   (b) Find an expression, in terms of n, for the number of counters in Pattern n.

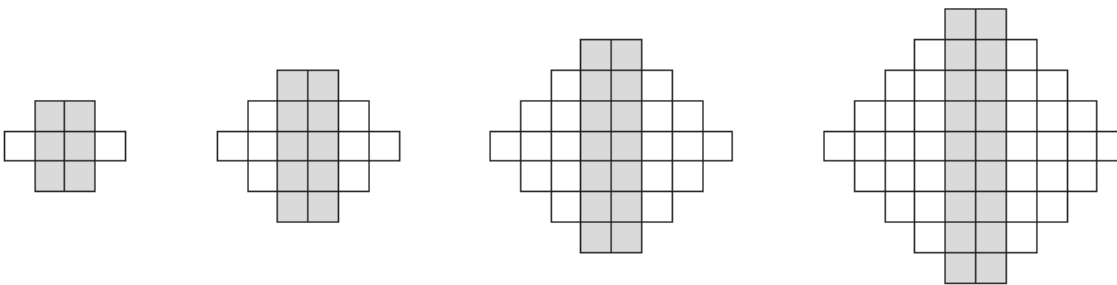   .... [2]

   (c) Shani has 100 counters.
   She uses some of the counters to make Pattern 20.
   She uses all the remaining counters to make Pattern k.

   Find the value of k.

   $k = $ .... [3]

Here are the first four patterns in a sequence made using grey tiles and white tiles.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

(a) Complete the table for the first five patterns in this sequence.

Pattern number	1	2	3	4	5
Number of grey tiles	6	10	14		
Number of white tiles	2	8	18		
Total number of tiles	8	18	32		

[2]

(b) Find an expression, in terms of n, for the number of grey tiles in Pattern n.

.... [2]

(c) Pattern k has 98 grey tiles.

Find k.

$k =$ .... [2]

2

(d) Find an expression, in terms of n, for the number of white tiles in Pattern n.

.... [2]

(e) Find the **total** number of tiles in Pattern 20.

.... [2]