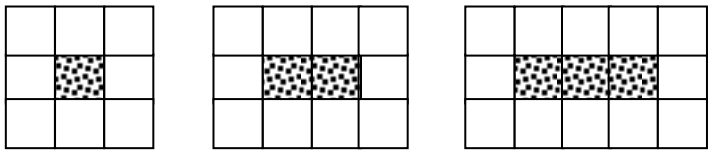
Sequences and Formulae

1. Find a formula for the nth term for each of the sequences below.

(a) 4, 7, 10, 13, . . . **(b)** 3, 8, 13, 18, . . . **(c)** 25, 29, 33, 37, . . .

2.



The diagrams on the above shows tiling patterns for doorsteps.

(a) Draw the 4th pattern in the sequence.

(b) Complete the table below.

Number of coloured tiles, ***C***	1	2	3	4	5	6
Number of white tiles, ***W***						

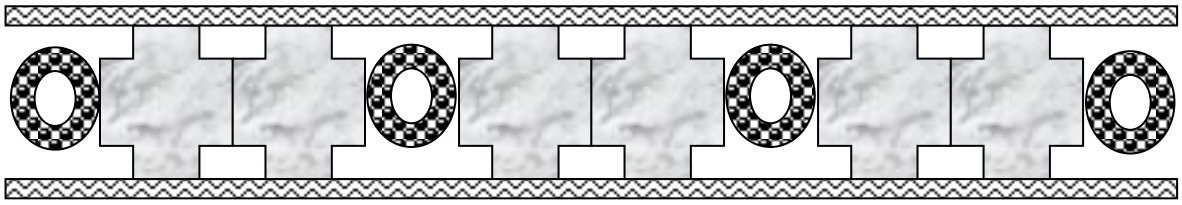
(c) Write down the formula for finding the number of white tiles if you know the number of coloured tiles.

W =

(d) How many white tiles would you need if you had 13 coloured tiles?

(e) How many coloured tiles would you need if you had 24 white tiles?

2. *Coronet Wallcoverings* make several designs for wallpaper borders one of which is shown below. The pattern is made up of circle shapes and cross shapes.



(a) Complete the table below.

Number of circle shapes (C)	2	3	4	5	6	7
Number of cross shapes (N)	2		6			

(b) Write down a formula connecting the number of cross shapes, *N*, and the number of circle shapes, *C*.

N =

3. For their barbeque Mr and Mrs Goldie allowed 2 burgers for each person attending and an extra 8 to be on the safe side.

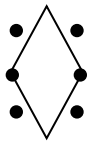
(a) Complete this table for the numbers of burgers they would need:

Number of people attending (n)	1	2	3	4	5	6	10
Number of burgers required (b)							

(b) Find a formula for the number of burgers for ‘n’ people attending the barbeque.

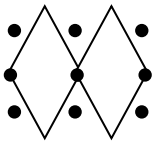
(c) How many burgers would be needed for a barbeque with 23 people attending?

4. A pattern is built up as shown in this diagram:



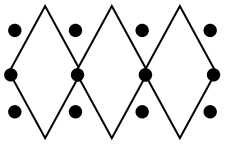
Pattern 1

1 Diamond



Pattern 2

2 Diamonds



Pattern 3

3 Diamonds

(a) Complete the table for the number of diamonds and number of beads in other patterns.

Number of Diamonds	1	2	3	4	5	10
Number of Beads	6	9	12			

(b) Write down a rule, in symbols, for finding the number of beads needed for any number of diamonds.

(c) Jasper has 57 beads, how many diamonds would he need to use up all of the beads?