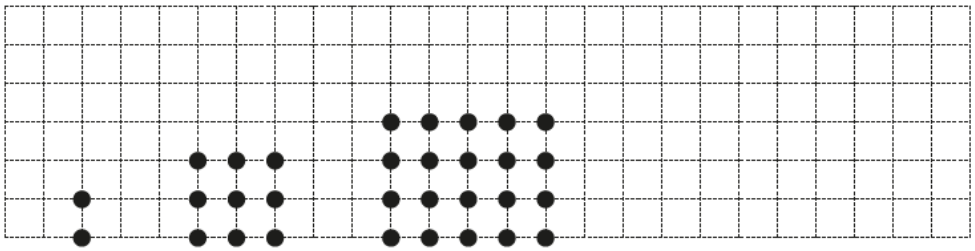
Geometrical terms – 2020 O Level Math D

1. Nov/2020/Paper_12/No.20



Pattern 1 Pattern 2 Pattern 3 Pattern 4

The diagram shows a sequence of patterns.

Each pattern has one more row, and two more dots in each row, than the pattern before it.

(a) On the diagram, draw Pattern 4. [1]

(b) **(i)** Complete the table for the first four patterns in this sequence.

Pattern number	1	2	3	4		n
Number of rows	2	3	4			p
Number of dots **in each row**	1	3				q
Total number of dots	2	9				

[1]

(ii) Find an expression, in terms of n, for p.

$p =$ ..... [1]

(iii) Find an expression, in terms of n, for q.

$q =$ ..... [1]

(iv) Find an expression, in terms of n, for the **total** number of dots in Pattern n.

..... [1]

2. June/2020/Paper_11/No.23

(a) The formula for the nth term of a sequence is $2n^3$.

Find the 3rd term of this sequence.

..... [1]

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

$$\frac{4}{3} \qquad \frac{9}{5} \qquad \frac{16}{7} \qquad \frac{25}{9}$$

(i) Write down the next term of this sequence.

..... [1]

(ii) Find a formula for the nth term of this sequence.

..... [3]

3. June/2020/Paper_12/No.17

Here are the first four terms of a number sequence.

$T_1 = 1^2 + 3 \quad = 4$

$T_2 = 2^2 + 8 \quad = 12$

$T_3 = 3^2 + 13 = 22$

$T_4 = 4^2 + 18 = 34$

(a) Find T_5.

$T_5 =$ ..... [1]

(b) Find an expression, in terms of n, for T_n.

$T_n =$ ..... [3]