Past Papers Worksheet P2 Number Sequence IGCSE Mathematics 0580

1. (a) The nth term of a sequence is $6 - 5n$.
   Write down the first three terms of this sequence. [1]
   (b) The nth term of another sequence is $5n^2 + 3$.
   Is 848 a term in this sequence? Explain how you decide [3]
   0580/23/O/N/17 Q17)

2. Here is a sequence.
   a, 13, 9, 3, –5, –15, b, ...
   Find the value of a and the value of b [2]
   0580/22/M/J/18 Q3)

3. These are the first five terms of a sequence.
   -4 2 8 14 20
   Find an expression for the nth term of this sequence. [2]
   0580/22/O/N/18 Q13)

4. Here are the first four terms of a sequence.
   23 17 11 5
   (a) Find the next term. [1]
   (b) Find the nth term. [2]
   0580/22/O/N/17 Q16)

5. 7, 5, 3, 1, – 1, ...
   (a) Find the next term in this sequence. [1]
   (b) Find the nth term of the sequence. [2]
   0580/21/M/J/16 Q15)

6. These are the first five terms of a sequence.
   13 8 3 –2 –7
   Find the nth term of this sequence. [2]
   0580/22/F/M/15 Q5)

7. 32 25 18 11 4
   These are the first 5 terms of a sequence. Find
   (a) the 6th term, [1]
   (b) the nth term, [2]
   (c) which term is equal to –332. [2]
   0580/22/M/J/14 Q20)

8. (a) The *n*th term of a sequence is 60-8*n*.
   Find the largest number in this sequence. [1]
   (b) Here are the first five terms of a different sequence.
   12 19 26 33 40
   Find an expression for the *n*th term of this sequence. [2]
   0580/21/M/J/20 Q5

9. (a) These are the first four terms of a sequence.

   5 8 11 14

   (i) Write down the next term [1]

   (ii) Find an expression, in terms of n, for the nth term. [2]

   (b) These are the first five terms of another sequence.

   $\frac{1}{2}$ $\frac{3}{4}$ $\frac{7}{6}$ $\frac{13}{8}$ $\frac{21}{10}$

   Find the next term. [1]

   0580/21/M/J/19 Q22)

10. Find the nth term of each sequence.

   (a) 7, 13, 19, 25, 31, ... [2]

   (b) 9, 16, 25, 36, 49, ... [2]

   0580/21/O/N/16 Q19)

11. A sequence is given by

   $u_1 = \sqrt{1}$, $u_2 = \sqrt{3}$, $u_3 = \sqrt{5}$, $u_4 = \sqrt{7}$, ...

   (a) Find a formula for u_n, the nth term. [2]

   (b) Find u_{29}. [1]

   0580/22/O/N/11 Q9)

12. Find the nth term of each sequence.

   (a) 4, 8, 12, 16, 20, ... [1]

   (b) 11, 20, 35, 56, 83, ... [2]

   0580/21/M/J/15 Q11)

13. 5, 11, 21, 35, 53, ...

Find the nth term of this sequence. [2]

0580/22/M/J/15 Q8)

14. Find the nth term in each of the following sequences.

(a) $\frac{1}{3}$, $\frac{2}{4}$, $\frac{3}{5}$, $\frac{4}{6}$, $\frac{5}{7}$ [1]

(b) 0, 3, 8, 15, 24, ... [2]

0580/21/O/N/13 Q9)

15. Find the nth term of each sequence.

(a) $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \frac{1}{10}$ [1]

(b) 1, 5, 25, 125, 625, [2]

0580/23/O/N/19 Q14)

16. Find the nth term of each of these sequences.

(a) 16, 19, 22, 25, 28, ... [2]

(b) 1, 3, 9, 27, 81, ... [2]

0580/22/M/J/16 Q18)

17. Find an expression for the nth term of each sequence.

(a) 11, 7, 3, −1, ... [2]

(b) 3, 6, 12, 24, ... [2]

0580/23/M/J/18 Q22)

18. Find the nth term of each sequence.

(a) −1, 0, 7, 26, 63, ... [2]

(b) 24, 12, 6, 3, 1.5, [2]

0580/22/F/M/23 Q20)

19. Find the nth term of each sequence.

(a) 8,15,34,71,132, ... [2]

(b) $\frac{2}{1}, \frac{3}{4}, \frac{4}{16}, \frac{5}{64}, \frac{6}{256}$, [3]

0580/21/O/N/21 Q16)

20. The nth term of a sequence is $an^2 + bn$.

(a) Write down an expression, in terms of a and b, for the 3rd term. [1]

(b) The 3rd term of this sequence is 21 and the 6th term is 96. Find the value of a and the value of b. You must show all your working. [4]

0580/22/F/M/16 Q20)

Answers

Q1) (a) 1, –4 and –9 (b) Yes because 13 is an integer	Q11) (a)$\sqrt{2n-1}$ (b)$\sqrt{57}$ or 7.55
Q2) 15 and -27	Q12) (a) 4n (b) $3n^2 + 8$
Q3) 6n - 10	Q13) $2n^2 + 3$
Q4) (a) -1 (b)-6n + 29	Q14) (a)n/(n+2) (b)$n^2 - 1$
Q5) (a)-3 (b)-2n + 9	Q15) (a)1/2n (b)5^{n-1}
Q6) -5n + 18	Q16) (a)3n + 13 (b) 3^{n-1}
Q7) (a) –3 (b) 39 – 7n (c) 53	Q17) (a) – 4n + 15 (b) (b) 3 x 2^{n-1}
Q8) (a) 52 (b) 7n + 5	Q18) $(a)(n-1)^3 - 1$ $(b)24 \times \left(\frac{1}{2}\right)^{n-1}$
Q9) (a)(i) 17 (ii) 3n + 2 (b) 31/12	Q19) (a) $n^3 + 7$ (b) $\frac{n+1}{4^{n-1}}$
Q10) (a)6n + 1 (b)$(n + 2)^2$	Q20) (a) 9a + 3b (b)3 and -2