



The 20th term of the number sequence is 50

(c) Write down the 21st term of the number sequence.

..... 46 .....

(1)

(Total 3 marks)

4. Here are the first five terms of a number sequence.

$4n$ : 4      8      12      16      20  
      3      7      11      15      19  
      +4    +4

(a) Work out the 8th term of the number sequence.

..... 31 .....

(1)

(b) Write down an expression, in terms of  $n$ , for the  $n$ th term of the number sequence.

.....  $4n - 1$  .....

(2)

(Total 3 marks)

5. The first five terms of an arithmetic sequence are

$7n$ : 7    14    21    28    35  
      2    9    16    23    30  
      +7    +7

Find, in terms of  $n$ , an expression for the  $n$ th term of this sequence.

.....  $7n - 5$  .....

(Total 2 marks)

6. The first five terms of an arithmetic sequence are

$5n$ : 5    10    15    20    25  
      2    7    12    17    22  
      +5    +5

Write down, in terms of  $n$ , an expression for the  $n$ th term of this sequence.

.....  $5n - 3$  .....

(Total 2 marks)

7. Here are the first five terms of an arithmetic sequence.

$$\begin{array}{cccccc} 4n: & 4 & 8 & 12 & 16 & 20 \\ & -1 & 3 & 7 & 11 & 15 \\ & & +4 & +4 & & \end{array}$$

(a) Find, in terms of  $n$ , an expression for the  $n$ th term of this sequence.

$$\dots\dots\dots 4n - 5 \dots\dots\dots$$

(2)

In another arithmetic sequence the  $n$ th term is  $8n - 16$

John says that there is a number that is in both sequences.

(b) Explain why John is wrong.

..... all numbers in 1<sup>st</sup> sequence are odd .....  
 ..... all numbers in the other sequence are even .....

(2)

(Total 4 marks)

8. The first four terms of an arithmetic sequence are

$$\begin{array}{cccccc} -4n & -4 & -8 & -12 & -16 \\ & 21 & 17 & 13 & 9 \\ & -4 & -4 & -4 & \end{array}$$

Find, in terms of  $n$ , an expression for the  $n$ th term of this sequence.

$$\dots\dots\dots -4n + 25 \dots\dots\dots$$

(Total 2 marks)

9. The  $n$ th term of a sequence is  $2n^2$

(i) Find the 4th term of the sequence.

$$\begin{array}{l} 2(4)^2 \\ 2(16) \end{array} \dots\dots\dots 32 \dots\dots\dots$$

(ii) Is the number 400 a term of the sequence?

..... No .....

Give reasons for your answer.

.....  $\frac{400}{2} = 200$ , 200 is not a square .....  
 ..... number .....

(Total 3 marks)

10. Here are the first 5 terms of an arithmetic sequence.

$$\begin{array}{cccccc}
 6n: & 6 & 12 & 18 & 24 & 30 \\
 & 3 & 9 & 15 & 21 & 27 \\
 & +6 & +6 & & & 
 \end{array}$$

(a) Find an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

$$6n - 3$$

(2)

Ben says that 150 is in the sequence.

(b) Is Ben right?

You must explain your answer.

all numbers in the sequence are  
odd

Ben is therefore incorrect.

(1)

(Total 3 marks)

11. Here are the first 5 terms of an arithmetic sequence.

$$\begin{array}{cccccc}
 7 & 14 & 21 & 28 & 35 \\
 2 & 9 & 16 & 23 & 30 \\
 +7 & +7 & & & 
 \end{array}$$

(a) Write down the 12th term of this sequence.

\*

$$\begin{array}{l}
 7(12) - 5 \\
 84 - 5
 \end{array}$$

79

(1)

(b) Find, in terms of  $n$ , an expression for the  $n$ th term of this sequence.

$$7n - 5$$

$$7n - 5$$

(2)

(Total 3 marks)

- \* 12. The first four terms of an arithmetic sequence are

$$\begin{array}{cccccc} & -4n & -4 & -8 & -12 & -16 \\ & 21 & 17 & 13 & 9 & \\ & & -4 & -4 & -4 & \end{array}$$

Find, in terms of  $n$ , an expression for the  $n$ th term of this sequence.

$$\frac{-4n + 25}{\dots\dots\dots}$$

(Total 2 marks)

- \* 13. Here are the first 5 terms of an arithmetic sequence.

$$\begin{array}{cccccc} 5n: & 5 & 10 & 15 & 20 & 25 \\ & 6, & 11, & 16, & 21, & 26 \\ & +5 & +5 & +5 & +5 & \end{array}$$

Find an expression, in terms of  $n$ , for the  $n$ th term of the sequence.

$$\frac{5n + 1}{\dots\dots\dots}$$

(Total 2 marks)

- \* 14. The first five terms of an arithmetic sequence are

$$\begin{array}{cccccc} & 7 & 14 & 21 & 28 & 35 \\ & 2 & 9 & 16 & 23 & 30 \\ & +7 & +7 & +7 & & \end{array}$$

Find, in terms of  $n$ , an expression for the  $n$ th term of this sequence.

$$\frac{7n - 5}{\dots\dots\dots}$$

(Total 2 marks)

15. Here are the first five terms of a number sequence.

3    8    13    18    23  
       +5    +5

(a) Write down the next **two** terms of the sequence.

28    33  
 ..... , .....

(2)

(b) Explain how you found your answer.

..... term to term rule +5 .....

(1)

(c) Explain why 387 is **not** a term of the sequence.

..... all numbers in the sequence  
 ..... end in 8 or 3 .....

(1)

(Total 4 marks)

16. Here are the first five terms of a number sequence.

4    8    12    16  
 3    7    11    15    19  
       +4    +4    +4

(a) Write down an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

.....  $4n - 1$  .....

(2)

Adeel says that 319 is a term in the number sequence.

(b) Is Adeel correct?  
 You must justify your answer.

.....  $4n - 1 = 319$  .....

$$4n = 320$$

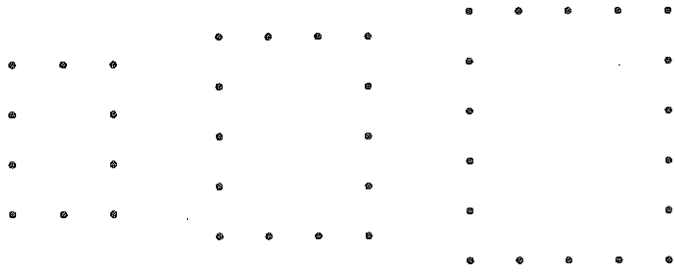
$$n = 80$$

..... Adeel is correct, it is the 80<sup>th</sup> term .....

(2)

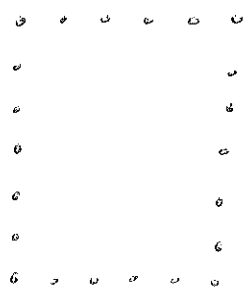
(Total 4 marks)

17. Here are some patterns made up of dots.



Pattern number 1      Pattern number 2      Pattern number 3

(a) In the space below, draw Pattern number 4.



(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of dots	10	14	18	22	26

+4    +4    +4

(1)

(c) How many dots are used in Pattern number 10?

$$26 + (4 \times 5)$$

46

(1)

(Total 3 marks)