



n^{th} term of Linear Sequences



REVISE THIS
TOPIC

- 1 The first four terms of an arithmetic sequence are

3 6 9 12 ...

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

$$3n$$

(Total for Question 1 is 2 marks)

- 2 The first four terms of an arithmetic sequence are

+4 \rightarrow 2 4 6 8
6 8 10 12 ...
+2 +2 +2

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

$$2n + 4$$

(Total for Question 2 is 2 marks)

- 3 The first four terms of an arithmetic sequence are

-1 \rightarrow 3 6 9 12
2 5 8 11 ...
+3 +3 +3

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

$$3n - 1$$

(Total for Question 3 is 2 marks)





- 4 The first four terms of an arithmetic sequence are

$$+5 \rightarrow \begin{matrix} 4 \\ 9 \end{matrix} \rightarrow \begin{matrix} 8 \\ 13 \end{matrix} \rightarrow \begin{matrix} 12 \\ 17 \end{matrix} \rightarrow \begin{matrix} 16 \\ 21 \end{matrix} \dots$$

$+4 \quad +4 \quad +4$

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

$$4n + 5$$

(Total for Question 4 is 2 marks)

- 5 The first four terms of an arithmetic sequence are

$$+6 \rightarrow \begin{matrix} 1 \\ 7 \end{matrix} \rightarrow \begin{matrix} 2 \\ 8 \end{matrix} \rightarrow \begin{matrix} 3 \\ 9 \end{matrix} \rightarrow \begin{matrix} 4 \\ 10 \end{matrix} \dots$$

$+1 \quad +1 \quad +1$

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

$$n + 6$$

(Total for Question 5 is 2 marks)

- 6 The first four terms of an arithmetic sequence are

$$-3 \rightarrow \begin{matrix} 5 \\ 2 \end{matrix} \rightarrow \begin{matrix} 10 \\ 7 \end{matrix} \rightarrow \begin{matrix} 15 \\ 12 \end{matrix} \rightarrow \begin{matrix} 20 \\ 17 \end{matrix} \dots$$

$+5 \quad +5 \quad +5$

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

$$5n - 3$$

(Total for Question 6 is 2 marks)





- 7 The first four terms of an arithmetic sequence are

$$\begin{array}{ccccccc} +44 & \hookrightarrow & 6 & & 12 & & 18 & & 24 & & \dots \\ & & 50 & \rightarrow & 56 & \rightarrow & 62 & \rightarrow & 68 & & \\ & & & & +6 & & +6 & & +6 & & \end{array}$$

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

$$6n + 44$$

(Total for Question 7 is 2 marks)

- 8 The first four terms of an arithmetic sequence are

$$\begin{array}{ccccccc} -13 & \hookrightarrow & 10 & & 20 & & 30 & & 40 & & \dots \\ & & -3 & \rightarrow & 7 & \rightarrow & 17 & \rightarrow & 27 & & \\ & & & & +10 & & +10 & & +10 & & \end{array}$$

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

$$10n - 13$$

(Total for Question 8 is 2 marks)

- 9 The first four terms of an arithmetic sequence are

$$\begin{array}{ccccccc} +3.5 & \hookrightarrow & 0.5 & & 1 & & 1.5 & & 2 & & \dots \\ & & 4 & \rightarrow & 4.5 & \rightarrow & 5 & \rightarrow & 5.5 & & \\ & & & & +0.5 & & +0.5 & & +0.5 & & \end{array}$$

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

$$0.5n + 3.5$$

(Total for Question 9 is 2 marks)





10 The first four terms of an arithmetic sequence are

$$+11 \rightarrow 9 \xrightarrow{-2} 7 \xrightarrow{-2} 5 \xrightarrow{-2} 3 \dots$$

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

$$\underline{-2n + 11}$$

(Total for Question 10 is 2 marks)

11 The first four terms of an arithmetic sequence are

$$+19 \rightarrow 15 \xrightarrow{-4} 11 \xrightarrow{-4} 7 \xrightarrow{-4} 3 \dots$$

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

$$\underline{-4n + 19}$$

(Total for Question 11 is 2 marks)

12 The first four terms of an arithmetic sequence are

$$+14 \rightarrow 9 \xrightarrow{-5} 4 \xrightarrow{-5} -1 \xrightarrow{-5} -6 \dots$$

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

$$\underline{-5n + 14}$$

(Total for Question 12 is 2 marks)





13 The first four terms of an arithmetic sequence are

$$+10 \rightarrow \begin{matrix} -9 \\ 1 \end{matrix} \rightarrow \begin{matrix} -18 \\ -8 \end{matrix} \rightarrow \begin{matrix} -27 \\ -17 \end{matrix} \rightarrow \begin{matrix} -36 \\ -26 \end{matrix} \dots$$

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

$$\underline{-9n + 10}$$

(Total for Question 13 is 2 marks)

14 The first four terms of an arithmetic sequence are

$$+111 \rightarrow \begin{matrix} -11 \\ 100 \end{matrix} \rightarrow \begin{matrix} -22 \\ 89 \end{matrix} \rightarrow \begin{matrix} -33 \\ 78 \end{matrix} \rightarrow \begin{matrix} -44 \\ 67 \end{matrix} \dots$$

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

$$\underline{-11n + 111}$$

(Total for Question 14 is 2 marks)

15 The first four terms of an arithmetic sequence are

$$+6.2 \rightarrow \begin{matrix} -0.2 \\ 6 \end{matrix} \rightarrow \begin{matrix} -0.4 \\ 5.8 \end{matrix} \rightarrow \begin{matrix} -0.6 \\ 5.6 \end{matrix} \rightarrow \begin{matrix} -0.8 \\ 5.4 \end{matrix} \dots$$

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

$$\underline{-0.2n + 6.2}$$

(Total for Question 15 is 2 marks)





16 The first five terms of an arithmetic sequence are

$$+1 \rightarrow \begin{matrix} 5 \\ 6 \end{matrix} \rightarrow \begin{matrix} 10 \\ 11 \end{matrix} \rightarrow \begin{matrix} 15 \\ 16 \end{matrix} \rightarrow \begin{matrix} 20 \\ 21 \end{matrix} \rightarrow \begin{matrix} 25 \\ 26 \end{matrix} \rightarrow \dots$$

$+5 \quad +5 \quad +5 \quad +5$

Work out the 20th term of the sequence.

$$\begin{aligned} 5n + 1 \\ 5 \times 20 + 1 \\ = 100 + 1 \end{aligned}$$

101

(Total for Question 16 is 3 marks)

17 The first five terms of an arithmetic sequence are

$$-5 \rightarrow \begin{matrix} 6 \\ 1 \end{matrix} \rightarrow \begin{matrix} 12 \\ 7 \end{matrix} \rightarrow \begin{matrix} 18 \\ 13 \end{matrix} \rightarrow \begin{matrix} 24 \\ 19 \end{matrix} \rightarrow \begin{matrix} 30 \\ 25 \end{matrix} \rightarrow \dots$$

$+6 \quad +6 \quad +6 \quad +6$

Work out the 50th term of the sequence.

$$\begin{aligned} 6n - 5 \\ 6 \times 50 - 5 \\ = 300 - 5 \end{aligned}$$

295

(Total for Question 17 is 3 marks)

18 The first five terms of an arithmetic sequence are

$$-2 \rightarrow \begin{matrix} 4 \\ 2 \end{matrix} \rightarrow \begin{matrix} 8 \\ 6 \end{matrix} \rightarrow \begin{matrix} 12 \\ 10 \end{matrix} \rightarrow \begin{matrix} 16 \\ 14 \end{matrix} \rightarrow \begin{matrix} 20 \\ 18 \end{matrix} \rightarrow \dots$$

$+4 \quad +4 \quad +4 \quad +4$

Work out the 100th term of the sequence.

$$\begin{aligned} 4n - 2 \\ 4 \times 100 - 2 \\ = 400 - 2 \end{aligned}$$

398

(Total for Question 18 is 3 marks)





19 The first five terms of an arithmetic sequence are

4 7 10 13 16 ...

Is the number 91 in the sequence?

You must show how you get your answer.

$$3n + 1 = 91$$

$$3n = 90$$

$$n = 30$$

Yes, it is the 30th term

(Total for Question 19 is 3 marks)

20 The first five terms of an arithmetic sequence are

3 7 11 15 19 ...

Is the number 201 in the sequence?

You must show how you get your answer.

$$4n - 1 = 201$$

$$4n = 202$$

$$n = 50.5$$

50.5 is not an integer

It is not in the sequence

(Total for Question 20 is 3 marks)





21 The first five terms of an arithmetic sequence are

7 13 19 25 31 ...

Is the number 124 in the sequence?

You must show how you get your answer.

$$6n + 1 = 124$$

$$6n = 123$$

$$n = 20.5$$

20.5 is not an integer
It is not in the sequence

(Total for Question 21 is 3 marks)

22 The first five terms of an arithmetic sequence are

50 47 44 41 38 ...

Is the number -10 in the sequence?

You must show how you get your answer.

$$-3n + 53 = -10$$

$$-3n = -63$$

$$n = 21$$

It is the 21st term

(Total for Question 22 is 3 marks)

