

Name: \_\_\_\_\_

Exam Style Questions

Sequences: nth term



Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

**Guidance**

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

[www.corbettmaths.com/contents](http://www.corbettmaths.com/contents)

Video 288



1. Here are the first five terms in a number sequence.

7 10 13 16 19 22 25 28 31 34

(a) Find the 10<sup>th</sup> term in this number sequence.

34  
.....  
(2)

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

$3n+4$   
.....  
(2)

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2. A number sequence has  $n$ th term  $6n + 3$

(a) Write down the first four terms of this sequence.

1st term 9, 2nd term 15, 3rd term 21, 4th term 27  
.....  
(3)

(b) Sara says that 1008 is a term in this sequence.

Explain why she is wrong.

1008 is even, whereas all the  
terms in the sequence  $6n+3$  will be  
odd.  
.....  
(1)

3. A sequence of numbers is shown below.

1   5   9   13   17   ...   ...

(a) Find an expression for the  $n$ th term of the sequence.

$$\underline{4n-3}$$

(2)

(b) Explain why 95 will not be a term in this sequence.

$$\begin{aligned} 4n-3 &= 95 \\ 4n &= 98 \\ n &= 24.5 \end{aligned}$$

95 will be between the 24<sup>th</sup> & 25<sup>th</sup> terms.

.....

.....

(2)

4. The  $n$ th term of a number sequence is given by  $5n + 2$

(a) Work out the first three terms of the number sequence.

1st term 7, 2nd term 12, 3rd term 17

.....

.....

(2)

Here are the first five terms of another number sequence.

5   11   17   23   29

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

$$\underline{6n-1}$$

(2)

5. A sequence of numbers is shown.

2    9    16    23    30    ...    ...

(a) Find an expression for the  $n$ th term of the sequence.

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

(2)

(b) Find the 100th term in the sequence.

$$7 \times 100 - 5$$

$$\frac{695}{\dots\dots\dots}$$

(2)

6. The  $n$ th term of a number sequence is  $n^2 + 3$ .

(a) Find the first three terms of this sequence.

1st term  $\frac{4}{\dots\dots\dots}$ , 2nd term  $\frac{7}{\dots\dots\dots}$ , 3rd term  $\frac{12}{\dots\dots\dots}$

(2)

(b) Work out the difference between the 5th and 10th terms in the sequence.

$$5^2 + 3 = 28$$

$$10^2 + 3 = 103$$

$$\begin{array}{r} 103 \\ - 28 \\ \hline 75 \end{array}$$

$$\frac{75}{\dots\dots\dots}$$

(3)

7. The first 5 terms in a number sequence are

10 7 4 1 -2 ... ..

(a) Work out the  $n$ th term of the sequence.

$$-3n + 13$$

$$\frac{13 - 3n}{(2)}$$

(b) Find the 50<sup>th</sup> term of the sequence.

$$13 - 3 \times 50$$
$$13 - 150 = -137$$

$$\frac{-137}{(2)}$$

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8. Work out the  $n$ th term for this sequence

12 22 32 42 52 ... ..

$$\frac{10n + 2}{(2)}$$

9. The  $n$ th term of a sequence is  $3n - 2$

(a) Write down the first two terms of this sequence.

1st term ..... 1 ..... 2nd term ..... 4 .....  
(2)

(b) Which term of the sequence is equal to 70?

$$\begin{aligned}3n - 2 &= 70 \\3n &= 72 \\n &= 24\end{aligned}$$

..... 24<sup>th</sup> .....  
(2)

(c) Explain why 101 is not a term in the sequence.

$$\begin{aligned}3n - 2 &= 101 \\3n &= 103 \\n &= 34.\bar{3}\end{aligned}$$

..... 101 will be between the 34<sup>th</sup> & 35<sup>th</sup> .....  
..... terms in the sequence. ....  
.....

(2)

10. Here are the  $n$ th terms of 4 sequences.

Sequence 1	$n$ th term	$3n + 1$
Sequence 2	$n$ th term	$5n + 10$
Sequence 3	$n$ th term	$10n$
Sequence 4	$n$ th term	$5n - 1$

For each sequence state whether the numbers in the sequence are

- A Always multiples of 5
- S Sometimes multiples of 5
- N Never multiples of 5

$3n+1$	4	7	10	13	16
$5n+10$	15	20	25	30	35
$10n$	10	20	30	40	50
$5n-1$	4	9	14	19	24

Sequence 1 ..... S  
Sequence 2 ..... A  
Sequence 3 ..... A  
Sequence 4 ..... N

(4)

11. The  $n$ th term of a sequence is  $5 - 3n$

Write down the first three terms of the sequence.

1st term .....2....., 2nd term .....-1....., 3rd term .....-4.....  
(2)

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12. The  $n$ th term of a sequence is  $4n - 7$

(a) Write down the first three terms of the sequence.

1st term .....-3....., 2nd term .....1....., 3rd term .....5.....  
(2)

(b) What is the difference between the  $50^{\text{th}}$  and  $51^{\text{st}}$  terms?

4  
.....  
(1)

The last term of this sequence is 393.

(c) How many terms are there in this sequence?

$4n - 7 = 393$   
 $+ 7 \quad + 7$   
 $4n = 400$   
 $n = 100$

100  
.....  
(2)



13. Find the  $n$ th term of the sequences

(a) 1, 4, 9, 16, 25, ...

$$\frac{n^2}{\dots\dots\dots} \quad (1)$$

(b) 3, 6, 11, 18, 27, ...

$$\frac{n^2+2}{\dots\dots\dots} \quad (1)$$

(c) -3, 0, 5, 12, 21, ...

$$\frac{n^2-4}{\dots\dots\dots} \quad (1)$$

(d) 2, 8, 18, 32, 50, ...

$$\frac{2n^2}{\dots\dots\dots} \quad (1)$$

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14. The first 5 terms in a number sequence are

30 25 20 15 10 ... ..

Work out the  $n$ th term of the sequence.

$$-5n+35$$

$$\frac{35-5n}{\dots\dots\dots} \quad (2)$$

15. The first 5 terms in a number sequence are

2    2.5    3    3.5    4    ...    ...

(a) Work out the  $n$ th term of the sequence.

$$\frac{0.5n + 1.5}{(2)}$$

(b) Work out the 20<sup>th</sup> term of the sequence.

$$\begin{aligned} 0.5 \times 20 + 1.5 \\ 10 + 1.5 = 11.5 \end{aligned}$$

$$\frac{11.5}{(2)}$$

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16. Martin has written the first 50 terms of the sequence with  $n$ th term  $150 - 4n$ .

Work out which term is the first negative term.

$$\underline{150 - 4 \times 38 = -2}$$

$$\frac{38^{\text{th}} \text{ term}}{(3)}$$

17. The  $n$ th term of a sequence is  $(n + 1)(n + 3)$

Work out the first three terms of the sequence.

$$\begin{aligned} 1^{\text{st}} \text{ term: } & 2 \times 4 = 8 \\ 2^{\text{nd}} \text{ term: } & 3 \times 5 = 15 \\ 3^{\text{rd}} \text{ term: } & 4 \times 6 = 24 \end{aligned}$$

1st term  $8$ , 2nd term  $15$ , 3rd term  $24$   
(2)